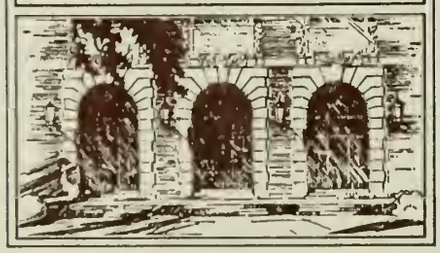

REPORT

on the

PROPOSED POST-WAR BUILDING PROGRAM

Submitted to the

ILLINOIS POST-WAR PLANNING COMMISSION

by

THE UNIVERSITY OF ILLINOIS
Urbana and Chicago
Illinois

UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS
JULY 1, 1944

(Revised September 1, 1944)

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Prepared by
The University Building Program Committee

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Professor W. C. Huntington, *Chairman*

UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS
JULY 1, 1944

(Revised September 1, 1944)

FOREWARD

This report was prepared to provide information concerning the history, organization, objectives, teaching and research programs, and present plant of the University of Illinois to give a background for the appraisal of the projects which are presented in the post-war program of building and related needs of that institution.

In presenting these projects for consideration, the Building Program Committee wishes to emphasize its full realization of the fact that the Physical Plant of the University is secondary to the staff and the students, by which the real strength of the University is determined. A strong staff operating in a well balanced and ample plant will give the students a full measure of training during the years they spend at the University. This report is arranged as follows:

The Committee wishes to express its appreciation of the splendid assistance and cooperation it has had from many members of the staff in preparing the material which is presented and in typing, mimeographing, printing and binding. Without this effective assistance the preparation of the report would not have been possible.

THE BUILDING PROGRAM COMMITTEE

Urbana, Illinois
July 1, 1944

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SECTION A. GENERAL DISCUSSION (continued)

SECTION B. PROPOSED PROJECTS

Map of the Urbana Campus, showing Preferred and Desirable Projects, is inserted inside of back cover.

SUMMARY OF REPORT

Introduction.--The post-war program for buildings and related needs on the Urbana and Chicago Campuses proposed by the Building Program Committee of the University of Illinois, is presented in detail on the following pages. This Summary is prepared to explain the general principles which have governed the selection of projects for inclusion in the program and to give a broad classification of these projects.

Because of the shortage of funds during the depression and the restrictions on the use of materials and labor during the war, there has been a marked deficiency in new building space, new equipment and utility expansion and improvement. Also, important accumulations of deferred maintenance have occurred. Since these adverse conditions started in 1930, and since the post-war building program is tentatively scheduled to end in 1950, the funds which are requested are for a building and maintenance program which would have extended over a 20-year period if the depression and the war had not intervened.

The program proposed for the Urbana Campus is designed to maintain, during this 20-year period, the same average annual increase of 74,000 square feet of floor area that prevailed during the preceding 30-year period from 1900 to 1930 and to offset the deferred maintenance since 1930 on the basis of an average life of fifty years for the various parts of buildings. Studies of probable post-war enrollments indicate that the average annual increase of 330 which prevailed from 1900 to 1930 will continue and that the normal enrollment in 1950 will be about 16,800. This is 25 per cent larger than the peak prewar enrollment of 13,380 in 1938-39. The proposed program also maintains the same average gross floor area of 225 square feet per student which has prevailed since 1900 and was exceeded by a wide margin from the founding of the University to that date. Returning veterans will account for a considerable portion of the increased enrollment. Every effort should be made to provide adequate facilities for these men.

Another important phase of the proposed program for the Urbana Campus is the provision for funds to finance the construction of new Residence Halls for students. Studies which have been made indicate that the housing shortage which existed before the war will be more acute after the war and that private construction cannot be depended upon to provide significant relief. The proposals made in this report would only partially relieve this condition. If new housing is not provided, the enrollment may be limited by the housing facilities.

The program proposed for the Chicago Campus is designed primarily to improve the hospital facilities which, even with the relatively large expenditure proposed, are inadequate when judged by accepted standards. This program also provides relief for the overcrowded library and space for educational displays as well as a new power plant and improved distribution facilities.

The funds required to carry out the proposed program total $32,300,000. It is realized that this total is large. However, it is not large because of abnormal expansion in the University's program but is large because it provides for deficits in building space, equipment and maintenance which have accumulated since 1930 and will continue until the program is completed in 1950. This is a 20-year period. Failure to provide funds for practically the entire program would result in lowering the physical standards which have prevailed on the Urbana Campus since 1900 and will make impossible needed improvements on the Chicago Campus to meet minimum acceptable standards.

The $32,300,000 total is distributed as follows:

URBANA CAMPUS

For predicted enrollment in present programs:	
Buildings	$ 9,542,000
Equipment	1,526,000
Modernizing and remodeling to offset deferred maintenance	2,868,200
New Student Residence Halls and Faculty Graduate-Student Center	3,530,000
For New Programs:	
Buildings	3,885,000
Equipment	1,825,000
Expansion and Improvement of Utilities	1,367,800
Campus Improvements	141,000
Total for Urbana Campus	$ 24,685,000

CHICAGO CAMPUS

New Buildings and Equipment for Present Programs.....	$ 4,873,000.
New Buildings and Equipment for New Programs.....	250,000.
Expansion and Improvement of Utilities.....	2,101,400.
Land Acquisition.....	390,600.
Total for Chicago Campus	$ 7,615,000
Total for Urbana and Chicago Campuses....	$32,300,000

Further discussion of the various factors involved in this program is given in the following paragraphs of this Summary. A detailed analysis of the program is given in the body of the report.

The Illinois Post-War Planning Commission has divided projects into three priorities on the basis of need. There are (1) Preferred, (2) Desirable, and (3) Deferrable. The Building Program Committee has followed this classification. As would be expected, most of the projects considered are in the "Preferred" class, many are in the "Desirable" class and a few in the "Deferrable" class. Since the total cost of the "Preferred" class is so large, the descriptions of only these projects are included in this report. However, summary lists of the Desirable projects are included. The Deferrable projects are omitted entirely. Prospectuses for only the Preferred Projects are submitted to the Post-War Planning Commission.

The tentative date set by the Post-War Planning Commission for the completion of the program is 1950. Projects are to be scheduled for construction during the first, second, or third biennium, between now and that date. The uncertainties involved in setting such dates are, doubtless, realized by all.

Classification of Preferred Projects.--The preferred projects which are proposed may be divided into the following classes, according to the basic objectives which the Committee has sought to accomplish:

1. New Buildings and Equipment for Present Programs: These projects provide for the prewar teaching programs which are expected to continue after the war. The major objective is to offset the deficiencies in floor space which have accumulated since 1930 and provide for the expected increases in

enrollment up to the year 1950, on the Urbana Campus, and for improving the hospital, library and museum facilities on the Chicago Campus.

2. Modernizing and Remodeling: These projects improve the quality and usefulness of present space by modernizing to offset the deferred maintenance which has taken place since 1930 and remodeling to adapt space to changes in use.

3. New Residence Halls and Faculty Graduate-Student Center: These projects partially provide for deficiencies in student housing which prevailed before the war and which will become extremely acute after the war in spite of any reasonable steps which may be taken to provide partial relief. They also provide recreational and social facilities for the faculty and graduate-students. It is expected that prewar rooming houses will be fully utilized.

4. New Buildings and Equipment for New Programs: These projects provide buildings and equipment for the Veterinary College, the Health and Physical Education Building and equipment for the program in Aeronautical Engineering, all of which have been inaugurated recently by the Board of Trustees. They also provide for a greatly expanded program of research based on the Betatron, and the expanded Atmospheric Research Program.

5. Utilities and Distribution Systems: These projects provide for the improvement of the present utilities and distribution systems to offset deferred maintenance and for their expansion to provide for the increased load created by new buildings and the improvement of services in present buildings.

6. Campus Improvements: These projects provide for new drives and walks made necessary by the construction of proposed buildings, for the improvement of present campus facilities of other types, and for landscaping.

7. Land Acquisition: This project provides for the acquisition of land for future campus development. Any land which must be acquired to provide for a building proposed in this program is included in the project for that building.

8. Operating Costs: Under this heading are included the total costs for operation and maintenance of non-revenue-producing buildings proposed in this program. The operating costs for revenue-producing buildings, such as residence halls, are charged against their income. The size of teaching staff is determined by the enrollment and is independent of the amount of floor space. For that reason the staff costs are not charged to new buildings. However, the staff required to operate the new hospital unitsin Chicago results from the construction of new space, so is included. The cost of operating new research programs is not always included in the operating cost because it is determined by other factors than the amount of new space, and cannot be estimated from the information which is available.

THE URBANA CAMPUS

1. New Buildings and Equipment for Present Programs.--The predicted enrollment for 1950 is 16,800, the floor area required for present teaching and research programs is 225 square feet per student and the average estimated cost of buildings is $10.00 per square foot.

On this basis the number of square feet of floor area required to accommodate 16,800 students is determined as follows:

Total floor area in 1950---16,800 x 225 = 3,780,000 sq. ft.

The new floor area required is:

Total Floor Area.....	3,780,000 sq. ft.
Present Floor Area.....	2,790,000 sq. ft.
New Floor Area Required..	990,000 sq. ft.

The cost of new floor area required is estimated as

$10 x 990,000 = $9,900,000

The cost of proposed projects if $9,542,000*

This cost includes the usual fixed equipment and furniture but does not include special equipment required to place specialized buildings in operation.

* Does not include Power Plant equipment cost, which is $460,000.

The cost of equipment for the Urbana campus which is not included in the building cost, is about $3 per square foot of floor area. The total amount proposed by the Committee for equipping buildings initially for present programs is

Proposed Special Equipment is $1,066,000*

This is $1,066,000 ÷ 990,000 = $1.07 per square foot. Additional equipment will have to be provided from other sources as the programs in these buildings develop.

2. Modernizing and Remodeling.--A reasonable annual allowance for the cost of keeping buildings in repair and offsetting depreciation, obsolescence and change in use is two per cent of their reproduction cost. For the fifteen-year period from the beginning of 1930 to date, the expenditures on the Urbana campus for this purpose have averaged somewhat less than one per cent. On this basis, deferred maintenance, since 1930, has therefore amounted to 15 per cent of the reproduction cost of the buildings. The reproduction cost is not known, but using the investment cost of $22,000,000, which is probably about two-thirds of the reproduction cost, the allowance for modernizing and remodeling of present buildings would be

Estimated Cost of Modernizing and Remodeling 0.15 x $22,000,000 = $3,300,000

Proposed for Modernizing and Remodeling = $2,868,200

3. Residence Halls and Faculty Graduate-Student Center.--Before the war, when the maximum enrollments were about 13,000, there was an acute shortage of desirable housing for students. The University of Illinois has the lowest percentage of its students in university-owned residence halls of any school in the Big Ten. Also, the ratio of town population to student enrollment is far below that of any school in that group so the opportunities for finding rooms in private rooming houses are much less than at the other schools. For this reason,

* Does not include $460,000 for regular equipment in Power Plant.

the committee proposes that the following sum be provided for use as a basis for financing new residence halls:

Proposed for Financing Residence Halls - - - - - - - - $3,000,000

Practically no recreational and social facilities are available on the campus for faculty members and graduate students and there are no dormitories for graduate students. The Committee recommends the following allotment for this purpose:

Faculty Graduate-Student Center - - - - -	$ 500,000
Equipment - - - - - - - - - - - - - - - - - -	30,000
Total - - - - - - - -	$ 530,000

4. New Buildings and Equipment for New Programs.--The recent action of the Board of Trustees to establish a Veterinary College makes necessary the construction of new buildings for that college. The Committee makes the following tentative proposal for this purpose:

Proposed for Veterinary College Buildings & Equipment - - - $ 1,500,000

One of the outstanding achievements in modern physics has been the development of the Betatron by Dr. D. W. Kerst of the Department of Physics of this institution. It offers great promise for research in theoretical physics, treatment of cancer, and use in industry. The Committee makes the following proposal to provide for a Betatron Laboratory because of the possibilities of securing results of tremendous importance in physics, medicine and industry:

Proposed for Building - - - - - - - - - - - - -	$ 200,000
250-million electron volt Betatron - - - -	1,300,000
Additional generator in Power Plant - - - -	200,000
Total - - - - - - - - - -	$ 1,700,000

A Department of Aeronautical Engineering has been established recently by the Board of Trustees. The Committee proposes to house this department in the present Mechanical Engineering Laboratory after the proposed Mechanical Engineering Building has been constructed. The cost of remodeling this building for its new use is estimated as $135,000. This amount is included in the allotment for modernizing. An additional allotment for equipment is proposed:

Aeronautical Engineering Laboratory - - - - - - - - $135,000
Aeronautical Engineering Laboratory Equipment - - $ 75,000

At its meeting on June 22, 1944, the Board of Trustees took action to include the following building in this program:

Health and Physical Education Building - - - - - $2,300,000

5. Utilities and Distribution Systems.--An addition to the Power Plant to house additional units for generating electricity and steam is included under the recommendation for "New Buildings for Present Program".

The Committee has made an extensive investigation of the cost of providing for the necessary improvements and expansion of the distribution systems for electricity, steam, gas, air and water; increase in water storage; the extension of storm and sanitary sewers; and improvements and extension of the telephone system. It proposes the following allotments for these purposes:

Improvement and Expansion of Utilities - - - - - $ 1,367,800

6. Campus Improvements.--For the construction of drives and walks and for landscaping, the Committee proposes the following allotment:

Campus Improvements - - - - - - - - - - - - - - - $ 141,000

7. Land Acquisition.--The Committee proposes the following allotment for the acquisition of land on which to place the buildings which are proposed:

Land Acquisition - - - - - - - - - - - - - - - - - $ 230,000

This total amount is included in the projects involving land acquisitions.

8. Operating Costs.--The annual building, operating and maintenance costs of the proposed buildings on the Urbana campus, which are not revenue producing, are estimated to be about four per cent of the cost of the buildings. On this general basis, but considering certain special conditions:

Estimated annual building, operation and maintenance costs - - $674,910

9. Total Allotment for Urbana Campus.--The total allotment for the Urbana campus is as follows:

1.	New Buildings for present program.....	$9,542,000	
	Equipment for above buildings.....	1,526,000*	$11,068,000
2.	Modernizing and Remodeling.....		2,868,200
3.	New Residence Halls.....	$3,000,000	
	Faculty Graduate-Student Center.....	530,000	3,530,000
4.	New Buildings and Equipment for New Programs:		
	Veterinary College Buildings.....	$1,500,000	
	Betatron and Laboratory.....	1,700,000	
	Aeronautical Engineering.....	210,000	
	Health & Physical Education Bldg..	2,300,000	5,710,000
5.	Improvements and Expansion of Utilities.....		1,353,000
6.	Campus Improvements.....		141,000
7.	Land Acquisition (included in costs of projects involved)		(230,000)
	TOTAL.....		$24,685,000

A detailed distribution of these allotments is given in the Summary following page 41.

THE CHICAGO CAMPUS

1. New Buildings and Equipment for Present Programs.--The basic need for new building space on the Chicago campus is created by the low ratio of patients beds to the number of advanced medical students. At present this ratio is 5.5 including the beds in affiliated hospitals which are available to Univer-

* Includes $460,000 for regular equipment in Power Plant, as well as $1,066,000 for special equipment in other buildings.

sity students, which is below the average of all medical schools in the country and far below 10.3 which is the average of the ten highest schools. It is proposed to increase the hospital facilities by 300 beds. This will raise the ratio of 6.3 which is somewhat above the average for the country. The allotment proposed for the General Hospital addition is:

Proposed for General Hospital Addition - - - $3,773,000

A Visual Education Building is proposed to house the library, museums, and, at a later date, an auditorium. The allotment proposed for this building is:

Proposed for Visual Education Building - - - $1,100,000

2. Modernizing and Remodeling.--The proposal listed under Item 1 includes the cost of the complete modernization of the present hospital building.

3. New Residence Halls.--No provision for new residence halls is included in this program. Such halls are badly needed and are included in future plans.

4. New Buildings and Equipment for New Programs.--The proposal under this heading is for the expansion of the present programs in environmental medicine, including special research in aviation problems. Because the proposed expansion involves such a large expenditure, it is classed as a new program. The proposed allotment is:

Proposed for Equipment for Atmospheric Research - - $250,000

5. Utilities and Distribution Systems.--A new power plant is proposed to take care of the increased demands of the new buildings which are proposed and includes provisions for the Department of Public Welfare buildings for which a service charge is made. Improvements and extensions are proposed for the dis-

tribution systems to provide more dependable service to present buildings and to take care of proposed buildings. The allotment proposed is:

Proposed for Power Plant & Utilities - - - - $2,101,400

6. Campus Improvements.--No special project is proposed for this purpose. Such improvements in areas close to building are included in building costs.

7. Land Acquisition.--The acquisition of land for buildings proposed in this program is provided for in the projects for those buildings. In order that land may be available for future buildings, funds should be provided now so that individual parcels can be purchased as they become available at reasonable prices. In this way, the payment of excessive prices can be avoided. The amount proposed for land acquisition is:

Proposed for Land Acquisition - - - - - - - - $ 390,600

8. Operating Costs.--The estimated increase in annual operating costs for the General Hospital Addition is $684,000, including $435,000 for the care of patients and $249,000 for the cost of building operation and maintenance.

The estimated increase in annual operating costs due to the Atmospheric Research project is $57,000 for research costs and $46,000 for building operation and maintenance, or a total of $103,000.

The operation costs of the Power Plant are included in the operating costs of the buildings it serves.

The estimated annual increase in the operating budget to provide for the enlarged program and new services in the Visual Education Building are $18,000 for the library, $15,000 for the illustration studios, $20,000 for new services not now rendered and $90,000 for building operation and maintenance. The total increase is $143,000.

These increases in operating costs may be summarized as follows:

INCREASES IN ANNUAL OPERATING BUDGET
Due to Proposed Projects

Project	Building Operation	Other Costs	Total
General Hospital	$ 249,000	$ 435,000	$ 684,000
Atmospheric Research	46,000	57,000	103,000
Visual Education	90,000	53,000	143,000
Totals	$ 385,000	$ 545,000	$ 930,000

The operating costs are not chargeable to these programs but they should be kept in mind when considering the total effect of the program.

9. Total Allotment for Chicago Campus.--The total allotment for the Chicago campus is as follows:

1.	New Buildings for present programs.....	$ 4,873,000
2.	Modernizing and Remodeling.....	In item 1
3.	Residence Halls.....	None
4.	New Buildings and Equipment for New Programs.....	250,000
5.	Utilities and Distribution Systems.....	2,101,400
6.	Campus Improvement.....	None
7.	Land Acquisition.....	390,600
	TOTALS.....	$ 7,615,000

For distribution of allotments among buildings see table following page 41.

PART I

INTRODUCTION

PART I. INTRODUCTION

1. History.--The University was incorporated by an Act of the General Assembly in 1867 as Illinois Industrial University located in Urbana. This action was taken following an Act of Congress, known as the "Morrill Land Grant" whereby the national government gave each state in the Union public land scrip equal to 30,000 acres for each senator and each representative in Congress. These grants were made "for the endowment, support, and maintenance of at least one college whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts ..... in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

In addition to the original endowment, Congress has made provision for Land Grant institutions by supplementary acts carrying annual appropriations, which in most cases are for specific purposes. As noted in paragraph 3, the principal support of the University is provided by the State, partly through a special tax of one-third mill, and partly by appropriations from the general reserve.

The University opened on March 2, 1868 with fifty men students and a faculty consisting of one Regent and two professors. Instruction was first given in algebra, geometry, physics, rhetoric and Latin. Later in the same year, a chemistry laboratory was provided and in the following year laboratory work in botany was started. In 1870, a mechanical shop was equipped to give the first shop instruction offered in any university.

Almost since its beginning, the University has been co-educational as the result of action taken in 1870, to admit women students. Since that time, from one-sixth to one-third of the students have been women.

The original state law did not authorize the University to grant diplomas and degrees but only to issue certificates. This authority was given by the General Assembly in 1877. In 1885, this body changed the name of the institution to the University of Illinois.

From this simple beginning, the program in Urbana has expanded to cover a wide range of fields. The programs now operating on the Urbana campus are considered in Part II, Section A, paragraph 4, and on the Chicago campus, in the same paragraphs of Part III.

The Colleges of Dentistry, Medicine, and Pharmacy, which are located in Chicago, were originally independent, proprietary institutions before becoming affiliated with the University of Illinois. The College of Pharmacy is by far the oldest, having been organized as the Chicago College of Pharmacy on September 5, 1859, eight years before the University itself was incorporated. It was the third institution of its kind in the United States. Activities were suspended during the Civil War, and the College was not reopened until 1870. When its property was destroyed by the "Chicago fire" of 1871, the pharmacists of the world came to the rescue promptly, those of Great Britain in particular, and enabled the College to reopen again in 1872, with new equipment, including a library, much better than ever before. In 1896 it became the School of Pharmacy of the University of Illinois, and in 1932 its name was changed to the College of Pharmacy when the curriculum leading to the degree of Bachelor of Science in Pharmacy was announced. In 1939-1940 the College of Pharmacy was moved from its former quarters, 715 South Wood Street, to the Medical and Dental College Laboratories Building.

The College of Medicine opened October 14, 1881, as the College of Physicians and Surgeons of Chicago. It became affiliated with the University of Illinois under a lease in 1897, and in 1900 its name was changed to the College

Medicine of the University of Illinois. Not until 1913, however, did it become an integral part of the University. During most of its early history it was located north of Cook County Hospital on the area now forming the Convalescent Park. In 1931 it was moved to its present quarters in the west unit of the Medical and Dental College Laboratories Building. In 1941 Rush Medical School became affiliated and members of its staff were added to the clinical faculty of the College of Medicine. The College of Dentistry was established in 1892, as the Columbian Dental College, a proprietary institution. After partial reorganization in 1898, it became known as the Illinois School of Dentistry. Its first affiliation with the University took place in 1901, when it became the School of Dentistry of the University of Illinois. In 1905, its name was changed to the College of Dentistry and in 1913 the University assumed complete control. of its kind in this country. The Bureau of Educational Research, founded in 1918; the Bureau of Economic and Business Research, founded in 1921; the Bureau of Institutional Research, founded in 1933, and the Bureau of Community Planning, founded in 1934, are similar organizations operated on a smaller scale.

The first building used by the University was completed in 1862 to provide quarters for a co-educational boarding school which was to have been known as the Champaign and Urbana Institute. Shortly after completion, it was donated to the State for University purposes as a part of Champaign County's contribution to the new institution. It was a five-story brick structure located on the southeast corner of University Avenue at Wright Street, or in the northwest corner of the area now known as Illinois Field. The floor area was approximately 37,000 square feet and the cost is reported as $175,000 but was probably considerably lower. It served as a dormitory as well as a classroom and laboratory building. In 1880, a fire and windstorm caused such extensive

damage that the building, being no longer usable, was razed in 1881.

The Mechanical Building and Drill Hall was erected in 1871 at a cost of $25,000 on the southeast corner of Springfield and Burrill Avenues. It provided a floor area of 22,000 sq. ft. The first floor was used for shops and the second as a drill hall. The building was destroyed by fire in 1900.

University Hall was completed in 1873 at a cost of $148,000, exclusive of heating equipment and furniture. It provided a floor area of 97,300 square feet. Upon the completion of this building, all classes were moved from the original building except Chemistry so, with this exception, the entire academic program was housed in University Hall and the Mechanical Building and Drill Hall. University Hall was razed in 1938, after 65 years of service, because of structural weaknesses. The cost, up to the time of demolition, was $163,000.

The Old Chemistry Building, now known as Harker Hall, was completed in 1878 at a cost of $40,000 and provided a floor area of 23,660. It is the oldest building now on the campus. In 1896, it was struck by lightening. The resulting fire destroyed the roof and practically all of the interior. These were immediately restored. Chemistry was moved to the west section of Noyes Laboratories in 1902, when that building was completed. The vacated quarters were assigned to the College of Law which remained in the building until 1928 when that College moved to its present quarters, which had previously been the Library Building. The vacated building was assigned to the Department of Entomology.

Statistical information concerning former buildings on the Urbana campus is summarized in the following table:

Name of Building	Period of Service	Floor Area sq. ft.	Cost in Dollars
Original Building, called University Building, Old University Building, and Old Dormitory	1862 to 1880	37,000	$ 175,000
Mechanical Building & Drill Hall	1871 to 1900	22,000	148,000
University Hall	1873 to 1938	97,300	163,000

The total gross floor area provided by these buildings was 37,000 square feet from 1867 to 1870; 59,000 square feet from 1871 to 1872; 156,300 square feet from 1873 to 1880; 119,300 square feet from 1881 to 1900; and 97,300 square feet from 1901 to 1938. The gross floor areas from 1867 to 1943, excluding that of the original building and the Mechanical Building and Drill Hall, but including University Hall, are given in the table on page 23.

There is much uncertainty concerning the character of use which was made of the floor space in the first two buildings so, for the purpose of the studies in this report, the floor space contributed by the first two buildings is not included. At the present time there are 76 major buildings on the Urbana campus, built at a total cost of over 22 million dollars, as shown in the table following page 14.

The buildings formerly occupied by the Chicago Colleges, or their predecessors, and information concerning them are given in the following table. At present, there are six major buildings on the Chicago campus, built at a total cost of $7,345,000. These are listed in paragraph 6 of Part III.

BUILDINGS FORMERLY OCCUPIED BY CHICAGO COLLEGES

Building	Date Acquired	Original Cost	Improvements	Total Investment	Disposition
College of Medicine					
Honore & Congress	1913	$155,000	$23,633	$ 178,633	Demolished 1939
College of Dentistry					
Honore & Harrison	1913	30,000	38,349	68,349	Demolished 1939
College of Pharmacy					
709 S. Wood St.	1915	61,022	62,677	123,699	Demolished 1939
715 S. Wood St.,	Built 1928	343,680	4,000	347,680	Union Bldg. 1941
721 S. Wood St.	1917	13,026	(In above)	(Transf.)	Remodeled* 1941

* Now the Illini Union Building.

Buildings in the present quadrangle south of Polk Street are not included in the table on page 5. A detailed description of the original acquisition in 1931 from the College of Physicians and Surgeons appears on page 2 of the "Introduction" to this Report. This shows a land cost of $60,000 for both medical and dental buildings which was a part of the transaction but is not included in the tabulation given on page 5.

2. Organization.--The State law places the control of the University under a Board of Trustees, consisting of the Governor and the Superintendent of Public Instruction, who are ex-officio members, and nine elected members.

The present members of the Board of Trustees are:

Dwight H. Green, Governor of Illinois
Vernon L. Nickell, Superintendent of Public Instruction

Frank A. Jensen	Mrs. Helen M. Grigsby
Orville M. Karraker	Chester R. Davis
Dr. Karl A. Meyer	Dr. Martin G. Luken
John R. Fornof	Frank H. McKelvey

Park Livingston, President of Board

The administration of the University is now vested by the Board of Trustees in Arthur C. Willard, President, A. J. Harno, Provost, the Senate, the Faculties of the Colleges and Schools, the Deans of the Colleges, the Directors of Schools, and the General Administrative Officers. The Council, an advisory body, consists of the President, the Provost, the deans, the directors and three members chosen by ballot from and by the membership of the Senate.

The Senate consists of the full professors, the President, the Provost, the Deans, the Directors, and certain other administrative officers.

The College is the largest educational and administrative group. Each college consists of the departments or other interests which can most appropriately be grouped in a single group. The School is an educational and

administrative unit occupying a status between that of a College and a Department. It may be included within a college organization or may be separate. The Department is the primary unit of education and administration in the University.

The Experiment Stations are administered by the corresponding Colleges with the Deans serving as Directors. The Research Bureaus are administered by the corresponding colleges except the Bureau of Institutional Research, which is responsible to the President.

The State Surveys, under the Civil Administrative Code of 1917, are divisions of the State Department of Registration and Education. They operate on the appropriations provided for them by the State in buildings or other quarters located on the Urbana campus, provided by the University or by direct appropriation by the Legislature. The University furnishes the light, heat, water and other utilities as well as janitor and other services required for operation.

3. Sources of Income.—The principal support of the University of Illinois comes from appropriations of the General Assembly of the State of Illinois. This is true both of capital expenditures and operating expenses.

The net investment in the physical plant of the University at cost on June 30, 1943 was $43,971,932. Funds for this investment came from the following sources:

From the State of Illinois.....	$ 36,562,591
From the Federal government.....	1,713,657
From private gifts.....	3,461,884
From borrowings.....	2,233,800

Loans used for the erection of new buildings are liquidated out of the income of those buildings and not from state appropriations.

The operating expenses of the University for the year 1939-40 totaled $8,508,641. Of this amount the sum of $5,432,500 represents appropriations from

state revenue. Of the remainder, $1,645,676 came from student fees and other sources applicable to the general budget of the institution. The balance, $1,430,465, is from restricted federal grants, private gifts and endowments, or the gross operations of the residence halls and other self-supporting activities. With the exception of such activities providing their own income, funds for operation and maintenance of University buildings are supplied only from state appropriations.

4. Appraisal of Needs.—Recommendations concerning the University's need for funds for new buildings; modernizing or remodeling present buildings; expansion and improvement of utilities; and extension or improvement of distribution systems for electricity, steam and water are made by the Building Program Committee to the Council, the President and finally, with their approval, to the Board of Trustees.

The members of this Committee are selected to cover a wide range of interests and experience so that all phases of the University's program will receive attention. The present members are:

R. B. Allen, Executive Dean of the Chicago Colleges
R. D. Carmichael, Dean of the Graduate School
C. R. Griffith, Director of the Bureau of Institutional Research
A. J. Harno, Dean of the College of Law and Provost
C. S. Havens, Director of the Physical Plant
H. T. Scovill, Acting Dean of the College of Commerce and Business Administration
W. C. Huntington, Head of the Department of Civil Engineering, Chairman of the Committee

In starting its study of the needs which should be included in the proposed Post-War Building Program, the Committee requested all Deans, Directors and others, who might be concerned, to provide statements concerning the needs of the various departments or other administrative units. To secure uniformity a suggested outline was provided. Building committees were appointed by the

various colleges, schools, and departments which did not already have such committees. After making extensive studies, these committees provided the Building Program Committee with statements of their needs. These were compiled into a document entitled "Inventory of Building and Related Needs as Requested by Colleges, Schools and Departments of the University of Illinois, Urbana and Chicago, Illinois" dated April 1, 1944. Copies of this report have been furnished to the Executive staff of the Illinois State Planning Commission and are available to others concerned. More detailed information concerning the various needs than is given in this Report is included in the Inventory.

The Inventory formed the basis of the studies made by the Committee in its many meetings but this was supplemented by joint meetings with the various college and department committees and by conferences between the chairman and those concerned. The recommendations made by the Committee in this report have resulted from these procedures which have extended over a period of eight months. Since all but one of the members of the Committee have served in this capacity for several years, the Committee was quite familiar with the needs before starting the present study.

5. General Character of Programs.--The programs proposed for the Urbana and Chicago campuses may be divided into the following classes of projects:

(1) New Buildings and Equipment for Present Programs.

(2) Modernizing and Remodeling.

(3) New Residence Halls and Faculty Graduate-Student Center.

(4) New Buildings and Equipment for New Programs.

(5) Improvement and Expansion of Utilities.

(6) Campus Improvements.

(7) Land Acquisition.

6. Operating Costs.—The Committee has given careful consideration to increases in operating costs which would result from the construction of new buildings. Because of such increases, it has been considered unwise to expand the building space beyond that which is necessary to maintain proper educational standards. In general, these increases in operating costs do not include increases in teaching and research staffs because such increases are determined by the teaching and research load which is not controlled by the building space. The expected increase in enrollment will require increased staff regardless of any new buildings which may be constructed. The special conditions in the Chicago Colleges are considered in Part III.

Remodeling and modernization cause no significant increases in operating costs and may result in reductions. Improvement in the standards of lighting, which is so badly needed, would cause a slight increase in operating costs and an extensive program of air conditioning would cause an important increase. However, the latter is not contemplated. Improvement in the heating systems of the buildings and in the distribution systems would increase their efficiencies and would reduce the operating costs. Modernization would tend to reduce the cost of janitor service. Therefore, new buildings are the only items in the University's program which would make significant increases in the operating costs.

7. Priorities and Construction Schedules.—The priority classification of the Post-War Planning Commission is (1) Preferred, (2) Desirable, and (3) Deferrable.

The Committee has followed this classification in considering the projects which have been submitted. All projects which are urgently necessary to provide proper educational, health and safety standards with the expected

increase in enrollment are classed as "Preferred". The standards for the amount of new floor space required to maintain educational standards with the expected enrollment on the Urbana campus are based on the University's experience through the years and on data obtained from other institutions. The amount of new hospital space required to provide an adequate number of hospital patients for the training of each advanced medical student is determined from studies made by the American Medical Association. The health standards which should be provided in old, as well as new space are determined by the State Department of Public Health and the safety standards as affected by fire hazards are determined by the National Board of Fire Underwriters. All of the projects which are designed to satisfy these standards are classed as preferred. Projects which are recommended to provide more housing quarters to partially accommodate the expected increase in enrollment are classed as preferred. Projects designed to partially offset the deferred maintenance and depreciation resulting from deficiency of funds during the depression years and inability to secure materials and labor during the war years are also placed in this class. All such projects represent real needs which would normally have been provided for if the depression and the war had not intervened. Also, certain new programs have been authorized to meet urgent needs. Projects which provide building space for these programs are classed as "Preferred".

The program which makes proper provision for these preferred projects which have grown out of the normal operations of the University is of such a magnitude that little emphasis has been placed on the "Desirable" projects and practically none on "Deferrable" projects, although there are many projects which could be placed in these classes. Projects which would provide new space in excess of the requirements of the predicted 1950 enrollment have not been included. Some of the older buildings are of inferior construction, are in poor

condition and are obsolete in every respect. The expenditures required to put them in good operating condition are not justified by the quality of the space which would result. The investment in such buildings is small. The best procedure would be to demolish these buildings and provide new floor space to offset the resulting loss of floor space. Such projects are "Desirable" or "Deferrable". There are several projects which might well have been classed as "Preferred" but, because of the large number of projects in the preferred group, they were classed as desirable.

Many projects are interrelated, and the Power Plant and distribution systems are related to all projects which include new building space or improved facilities in present space. If the entire "Preferred" program is not approved, many adjustments will be necessary to obtain a workable program. Also, within the "Preferred" group of projects there are differences in urgency which should be taken into account in formulating a revised program.

As requested by the Commission, projects are arranged for construction in the three bienniums following the close of the war. Two factors control the formulation of such a construction schedule. In general, the most urgent projects should be carried out first but, in many cases, a highly urgent project cannot be constructed until another project is completed. If the entire program is not approved as submitted, adjustments will have to be made in the Construction Schedule to suit the changed conditions.

Also, as requested by the Commission, projects are classified according to whether they grow out of obsolescence, expansion of present program, or new programs.

PART II

THE URBANA CAMPUS

SECTION A

GENERAL DISCUSSION

PART II. THE URBANA CAMPUS

SECTION A. GENERAL DISCUSSION

1. Introduction.--The Urbana campus is located in Urbana and Champaign, in Champaign County, about 126 miles, south and somewhat west, from Chicago by rail and 90 miles, east and somewhat north, from Springfield. The combined population of Urbana and Champaign is about 40,000, exclusive of University students. These towns are surrounded by rich farm land. There is relatively little industrial activity in the region.

The University registration in Urbana reached the peak of 13,380, exclusive of the summer session, in 1938-39, just before the outbreak of the war. About three-fourths of the students are men. This is the third largest college resident enrollment in the country. The two highest enrollments are in institutions located in large centers of population where a large proportion of the students live at home. The University of Illinois is almost unique in being a very large institution located in a small center of population. This creates an acute housing problem which is discussed elsewhere in this report. The instructional, research, administrative, and clerical staffs in Urbana totaled about 2,200 in 1940, and the service and operating staff about 500. This group of 2,700, with their families, constitute a considerable proportion of the residents of Urbana and Champaign. Since the total population of these two towns includes such a large proportion of persons associated with the University, and since so many others are engaged in occupations which are influenced markedly by the University, its students and its staff, that institution is the predominating influence in the life of these communities. Briefly, Urbana and Champaign are University towns.

2. Present Plant.--The area of the Urbana campus is 400 acres and the adjoining University-owned and operated Agricultural Experiment fields and timber reservations in Champaign County is 1,438 acres. In addition, the University of Illinois Airport, located five miles south of the center of the campus and now under construction, occupies 762 acres. The investment in land occupied by the Urbana campus is $700,000; by the agricultural experiment fields and timber reservations in Champaign County, $580,000; and by the Airport, $250,000. The total investment in land in Champaign County is, therefore, $1,530,000.

The names, dates of completion, floor area, and costs to date of the buildings on the Urbana campus in 1944 are given in the table on the next page. The number of buildings which are of enough importance to be named in this list is 76. One or more major additions have been made to several of these buildings as indicated by two or more dates of completion being given in the table. The number of buildings and major additions is 108. The floor areas of some of the less important buildings are not given in the table. The total floor area of the buildings is about 3,500,000 square feet or about 80 acres. The floor area used directly or indirectly for teaching and research is 2,790,000 square feet. The difference in these two totals is made up of the floor area of such buildings as the Residence Halls, the Union Building, Skating Rink, President's House, Illini Hall, and Natural Resources Building, which are important in the total program of the University but which are not used for teaching and research. The reason for making this distinction will be explained later. The total cost to date of all of the buildings on the campus is about $22,000,000.

3. Development of Campus Plan.--A university campus is not an end in itself; it is only a means to an end. In its land arrangements and buildings,

BUILDINGS ON URBANA CAMPUS IN 1944

Name of Building	*Dates of Completion*	*Floor Area Sq. Ft.*	*Cost to Date Dollars*
Abbott Power Plant—see Power Plant			
Administration Building	1915	65,900	$277,000
Agricultural Engineering Building	1905	29,700	42,000
Agriculture Building—Old	1900	94,900	206,000
Agriculture Building—New	1924	86,600	510,000
Agronomy	1905		18,000
Agronomy Seed House	1930	11,500	53,000
Altgeld Hall—see Law			
Animal Pathology Laboratory	1905, 1920	13,400	38,000
Arcade (Purchased)	1938	24,600	80,000
Architecture Building	1927	65,200	486,000
Armory	1916, 1928	152,600	705,000
Auditorium	1908	35,200	159,000
Band Building	1917	7,300	27,000
Cattle Feeding Plant	1918		132,000
Central Poultry Plant	1917, 1926, 1936	4,100	35,000
Ceramics	1916	41,000	140,000
Ceramics Kiln House	1916	5,100	
Chemistry Building	1902, 1915	158,400	562,000
Chemistry Annex	1931	39,000	330,000
Civil Eng. Surveying Building	1905	9,400	30,000
Commerce Building	1926	71,000	506,000
Dairy Manufactures Building	1925	19,800	183,000
Dairy Pure Bred Barn	1926	34,100	85,000
Dormitories—Busey	1918	49,500	187,000
Davenport	1922, 1927, 1928		55,000
Evans	1926	38,400	304,000
Men's	1941	85,100	684,000
Electrical Engineering Building	1898, 1902, 1929	40,300	149,000
Electrical Engineering Annex	1898	9,000	23,000
Engineering Hall	1894	63,800	172,000
Entomology Building	1878	23,700	45,000
Garage and Shop	1923, 1928		32,000
Genetics	1916	5,300	14,000
Geological Survey Laboratory	1942	11,300	102,000
Greenhouses—Miscellaneous	Various	84,200	
Glass Areas	Various	121,600	
Gregory Hall	1940	102,700	890,000
Gymnasium, Huff	1926	125,900	773,000
Gymnasium, Women's	1931	62,000	311,000
Gymnasium Annex	1890, 1918	22,500	47,000
Gymnasium, Men's Old	1901	34,400	98,000
Gymnasium, High School	1930	5,300	26,000
Harker Hall—see Entomology			
Health Service	1896	9,900	15,000
Horticulture Field Laboratory	1925	37,200	240,000
Horticulture Service and Greenhouse	1914, 1929		110,000
Hospital	1926, 1940	42,700	425,000
Huff Gymnasium—see Gymnasium			
Illini Hall (Purchased)	1938	38,100	$ 99,000
Implement Barn			32,000
Law and Mathematics	1897, 1914	55,900	382,000
Library	1926, 1928, 1940	278,700	2,034,000
Lincoln Hall	1911, 1930	146,000	743,000
Locomotive Laboratory	1913	8,200	34,000
Machine Tool Laboratory	1895	12,600	23,000
Materials Testing	1923	81,400	437,000
Mathematics Building—see Law			
McKinley Hospital—see Hospital			
Mechanical Engineering Building	1905, 1910	44,500	92,000
Metallurgical Laboratory	1936	7,900	50,000
Mining Laboratory	1913	7,500	29,000
Military Barns	1920, 1928		49,000
Music Building	1922	59,200	481,000
Natural History Building	1892, 1909, 1923	122,900	378,000
Natural Resources Building	1940	56,200	582,000
Natural Resources Garage	1942	13,000	50,000
Noyes Laboratory—see Chemistry			
Physics Laboratory	1909	89,700	224,000
Physical Plant Storage Building	1910, 1916, 1921	32,400	143,000
(Old Power Plant)	1926, 1931		
Poultry Plant	1917, 1926, 1936		35,000
Power Plant New	1941	23,500	1,279,000
President's House	1932	17,100	153,000
Radio Lab. Elec. Eng.	1927, 1937	1,500	45,000
Residence Halls—see Dormitories			
Sanitary Engineering Laboratory	1943	5,000	47,000
Skating Rink	1931	48,000	338,000
Smith Memorial Building—see Music			
Stadium	1925		2,118,000
Stock Pavilion	1914	33,600	119,000
Surveying Building—see Civil Eng.			
Swine Plant	1925		32,000
Talbot Laboratory—see Materials Testing			
Tractor Laboratory	1924	6,500	37,000
Transportation Building	1912, 1923	44,500	169,000
Union Arcade—see Arcade			
Union Building	1941	105,500	1,483,000
University High School	1920	40,400	246,000
Vivarium	1917	14,600	92,000
Water Filtration Plant			77,000
Women's Building	1905, 1913, 1924	94,100	345,000
Women's Gym—see Gymnasium			
Woodshop and Foundry	1902	21,800	44,000
Miscellaneous Minor Buildings			246,000
Totals		3,353,900	$22,073,000

The total floor area does not include the floor areas not listed. The list includes the Union Building and the Men's Residence Halls whose titles are held by the Foundation.

the campus reflects the University's functioning as an educational institution. The campus is valuable only in so far as it serves as a place wherein staunch and lasting values are built into the lives of the young men and women who attend the instituion.

Beginning in 1867 as a small college of agriculture and mechanic arts, the University in seventy-five years has developed into one of America's great educational institutions.

At Illinois, the University campus plan has always reflected the institution's educational program and growth in a most telling fashion. In the University catalog for 1871 was printed a plat of the early campus which, with its parade ground, botanical garden, forestry, buildings and experimental farms, expressed admirably and with commendable order the educational objectives of Illinois Industrial University as the school was then called.

Down through the years University authorities have guided carefully the physical development of the school. The acquirement and improvement of lands, the construction of buildings to house the expanding educational programs, and the grouping of related interests, have, in general, exhibited orderly progress. In the lean years when appropriations were small, housing became congested and campus development was necessarily slow. In more opulent times facilities multiplied rapidly and campus development caught up with the educational program.

During the early years of the University, growth was steady but slow. As a result neither the eventual size nor the need of lateral development of the middle campus was envisioned at a time when the city blocks either side the middle campus were available. When it became apparent that the growth of the institution would require addition of lands to the east and west, those lands

had already been built upon. Therefore, this portion of the campus, only two blocks wide, was developed in a southward direction to a point just beyond the Auditorium, built in 1908, where it could expand to the east and to the west.

The present campus, that is the part containing the principal instructional buildings, forms an inverted T with the major axis running north and south and a minor axis running east and west. On the north campus beyond Green Street are the buildings of the College of Engineering; in the middle campus the Administration Building, the Union and structures of the College of Liberal Arts and Sciences. Near the crossing of the axes is the University Library. On the south campus are the Colleges of Agriculture, Commerce, and Fine and Applied Arts, together with the Military interests and the Athletic Departments for men and women. Other colleges and schools like Law, Journalism and Education are appropriately located near the College of Liberal Arts. Dormitories, gymnasiums, the Woman's Building, and service structures are likewise centrally placed.

It is the conviction of the University administration that the campus has now attained a north-and-south development beyond which it should not go, if students are expected to travel between buildings on foot. This means that the middle campus should be widened. It would be ideal if the University could, in time, acquire the blocks immediately east and west of the middle campus. Some parcels of land within these blocks are already in University hands and recommendations respecting the acquirement of other needed parcels are embodied in this report. Certainly the gradual deterioration of the properties immediately adjacent to the University on the east indicates that it should be possible to secure all parcels needed to develop the middle campus in a harmonious and balanced fashion.

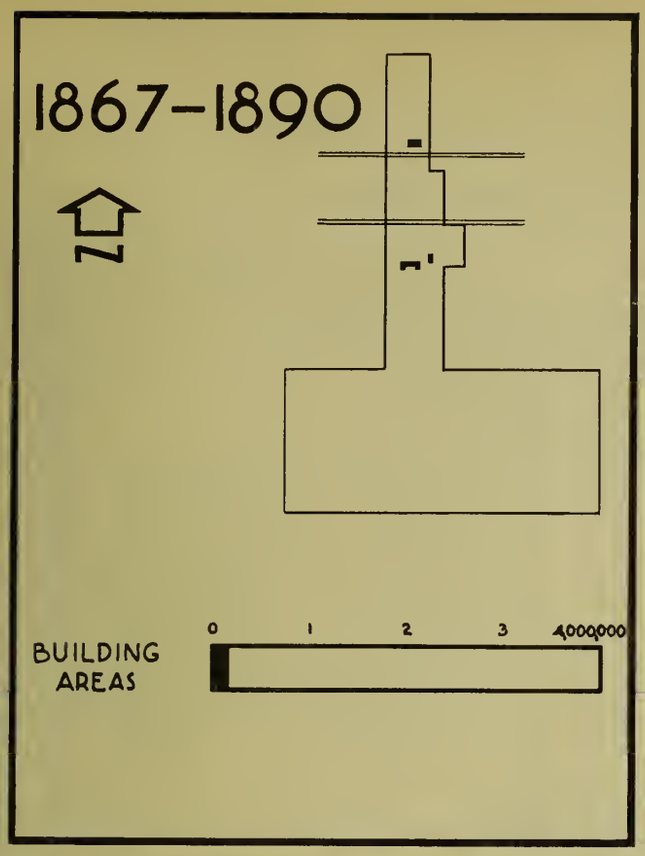
Beginning about 1895 President Draper and the Board of Trustees began a serious study of campus needs. Much of the basic work done at that time is

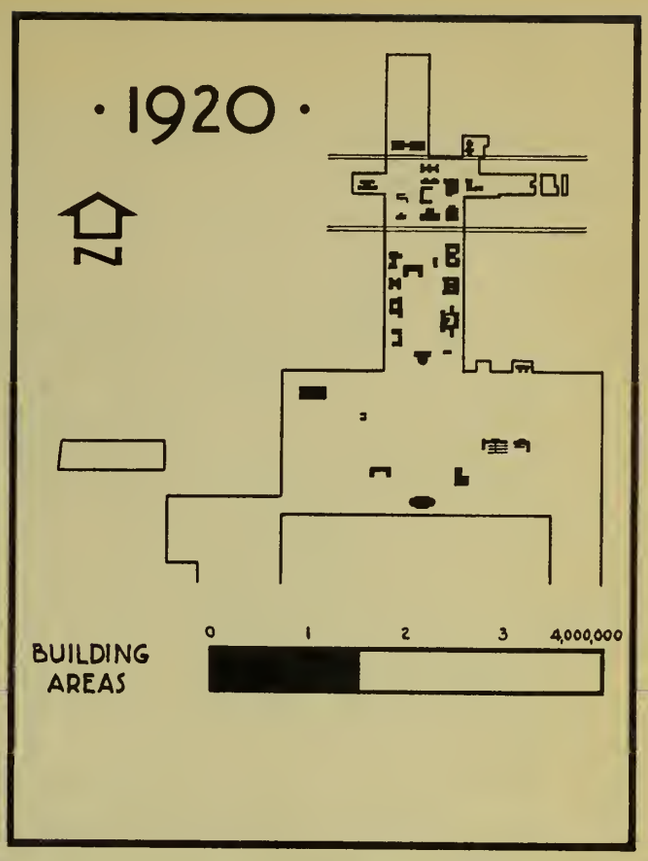
reflected in present-day campus arrangements. Since 1904, campus developments have been consistently studied and carefully directed by architectural and planning specialists employed for that purpose. Long-range master plans have been made from time to time by such authorities as C. H. Blackall and Frederick Law Olmsted of Boston, W. C. Zimmerman and Daniel H. Burnham of Chicago, and Charles A. Platt and Ferruccio Vitale of New York. These plans, together with constant necessary local revisions by the late Professor James M. White, Supervising Architect of the University, have kept campus arrangements abreast of the developing educational program of the University.

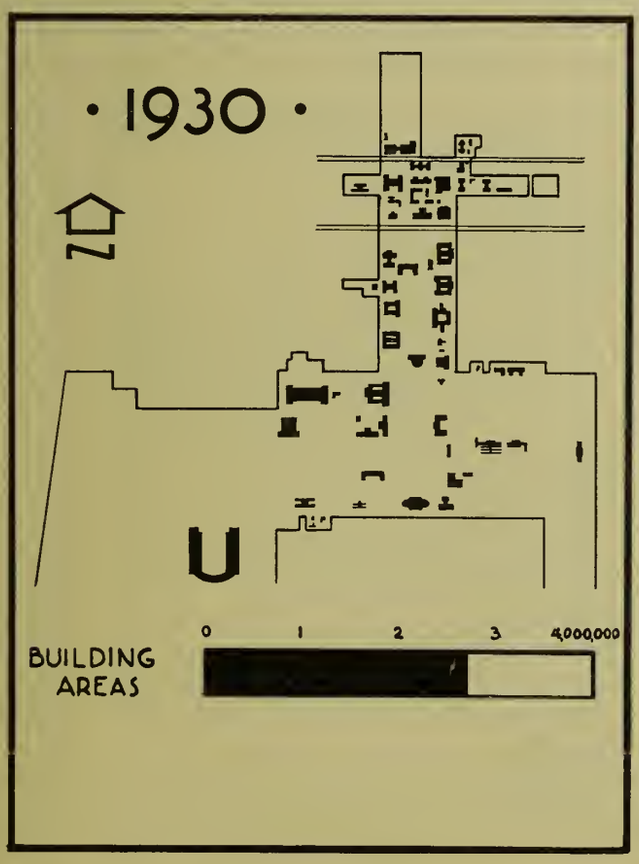
Thus the principal outlines of a campus to accommodate the maximum envisioned University enrollment for many years in the future have long been in existence. Various stages in the development of the campus plan are shown on the following page. A considerable number of the buildings needed to realize the "ultimate" plan have already been erected, as is shown on the 1943 campus plat, which accompanies this report. On this plan are also shown the locations of the "Preferred" and "Desirable" buildings recommended in the Post-War building program. This plan is bound on the inside of the back cover.

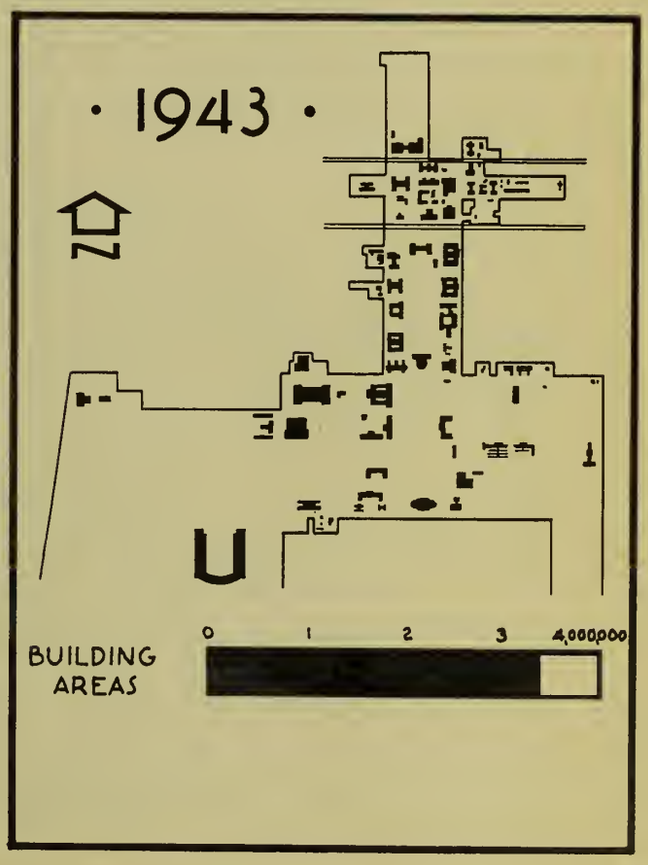
While it might appear that the structures thus included in the University's Post-War Building Program are scattered and have little relation to one another, the fallacy of such a conclusion becomes apparent when locations of the recommended projects are studied in relation to the 1943 plat of existing structures. In fact, it will be observed that the suggestions for new buildings embodied in this report harmonize with and amplify existing campus facilities in a fashion best calculated to keep the physical plant of the University abreast of the constructive emergent educational program of the institution.

The location of these proposed structures as shown on the accompanying map, is in line with long-range and well matured studies as to correct placement of the structures in question.









URBANA CAMPUS EXPANSION

4. Colleges, Schools and Departments.—The Colleges, Schools and Departments on the Urbana Campus cover a very broad range as may be seen from from the outline given below.

COLLEGES, SCHOOLS AND DEPARTMENTS ON URBANA CAMPUS

COLLEGE OF LIBERAL ARTS AND SCIENCES
1939-40 Enrollment: 4,027
Departments of

Astronomy	History
Bacteriology	Mathematics
Botany	Philosophy
Chemistry	Psychology
Classics	Political Science
English	Sociology
Entomology	Spanish and Italian
Geology and Geography	Zoology and Physiology
German	

COLLEGE OF AGRICULTURE
1939-40 Enrollment: 1,690
Departments of

Agricultural Economics	Dairy Husbandry
Agricultural Engineering	Forestry
Agronomy	Home Economics
Animal Husbandry	Horticulture
Animal Pathology and Hygiene	

COLLEGE OF ENGINEERING
1939-40 Enrollment: 1,885
Departments of

Ceramic Engineering	Mechanical Engineering
Civil Engineering	Mining & Metallurgical Engineering
Electrical Engineering	Physics
General Engineering Drawing	Theoretical & Applied Mechanics

COLLEGE OF LAW
1939-40 Enrollment: 262
(No Departments)

COLLEGE OF COMMERCE AND BUSINESS ADMINISTRATION
1939-40 Enrollment: 1,791
Departments of

Business Organization and Operation	Economics

COLLEGE OF EDUCATION
1939-40 Enrollment: 543
(No Departments)

(Continued on following page)

COLLEGES, SCHOOLS AND DEPARTMENTS ON URBANA CAMPUS (continued)

COLLEGE OF FINE AND APPLIED ARTS
1939-40 Enrollment: 789
Departments of

Architecture	Landscape Architecture
Art	Music, School of

GRADUATE SCHOOL
1939-40 Enrollment: 1,523

SCHOOL OF JOURNALISM
1939-40 Enrollment: 171

SCHOOL OF PHYSICAL EDUCATION
1939-40 Enrollment: 441
Departments of

Physical Education for Men	Physical Education for Women

LIBRARY SCHOOL
1939-40 Enrollment: 113

OTHER ADMINISTRATIVE UNITS

Division of University Extension	Military Department
Summer Session	Department of Military Bands
University Press	Business Office
Library	Registrar
Physical Plant Department	Dean of Students
Health Service	

5. Educational Objectives.—For seventy-six years the University of Illinois has been writing a magnificent story of expanding educational services to the people of the State. Even though its charter laid emphasis on agricultural and the mechanic arts, and even though work in these fields has grown rapidly with the years, the programs of the University are now so broad in scope that all the people in all their major activities have a personal share in them. The main goal of the institution, as of all the other land-grant colleges, is to provide the best possible conditions for the growth of the liberal arts, the sciences, and the major technical fields. It is only through broad programs of teaching, research and public service that the nation can realize its goal of a worthy American culture.

Teaching, research and public service are the three main elements in the life of the institution. No one of these elements can be preferred to the others. They have jointly contributed to national distinction, and the future of the University of Illinois will vary as the proper balance between them is maintained. The responsibility of the University in the education of a large community of undergraduate and graduate students has grown as the number of residence students has grown. In the size of its staff, and of its student body, the University is really a considerable city in its own right. There can be no question but that this responsibility will increase in the post-war period. It will grow because more youth than ever before will seek a general education and strive to master the technical skills of their chosen profession. But also, it will grow because of progress in research and in scholarly investigations. A people who no longer desire to learn about the ways of nature, master disease, create new sources of comfort, and perfect the great principles which ought to guide the life of the individual and of society, are a dying people. Research creates wealth, and it shows how wealth can be wisely used. This wealth is both material and spiritual, and it is daily shared in a personal way by every man, woman and child in the commonwealth.

The wealth created by the University is shared most directly with its residence students. Through instruction on the campus, thousands of youth become both leaders in medicine, engineering, agriculture, law, commerce, industry, or teaching, and they become members in the solid ranks of our citizens. But the University does not ask all of its students to come to its own campus. It takes its teaching and its research to the homes, the farms, the stores and offices of the citizens of the State. This is done by the activities of such divisions of the University as its Extension Division, its Radio Station, and the public service activities of the Colleges of Agriculture, Commerce, Education, Engineer-

ing and Medicine. In actual fact, the student body consists potentially of the entire adult population of the State.

In working toward the three-fold aim of teaching, research and public service, the University of Illinois can feel justified in a sense of pride. Many of its facilities for research in science and technology cannot be surpassed. It has a distinguished record of contributions to theory and practice in all walks of life. Its great library and its well equipped laboratories invite the attention of scholars all over the world. The people can feel a deep sense of satisfaction about the long list of distinguished men, many of them trained by the University, who are known not only in America but in foreign lands as well. But the great achievements of the University in research and in public service have not been allowed to interfere with a solid program of instruction and of welfare for the undergraduate student.

In reaching its present level of distinction, the University has called upon all of the people for aid. Tuition fees have never matched even the cost of instruction. Through their elected representatives, the people have contributed generously to faculty salaries, laboratory apparatus, classrooms, lecture halls, and equipment. But even though the heart of the University is in its faculty, the faculty and the students must have a place to work. Here again the people have been generous. Thirty million dollars worth of land and buildings form the Physical Plant of the University. But many of the buildings are old. Research and new methods of instruction call for constant changes in old buildings and the yearly construction of new buildings. The programs set forth in these pages have been studied from one point of view, namely, what do the students, the faculty and the people of the State need in order to carry on the great work of teaching, research and public service? The proposed new buildings and the modernization of old buildings are intended only to satisfy the future needs of the University in its developing programs of instruction, research and public service.

6. Statistical Information.--The enrollment on the Urbana campus together with the total floor area devoted to teaching and research, and the floor area per student by years from the founding of the University in 1867 to 1942, are shown in the table on the following page.

a. Enrollment:

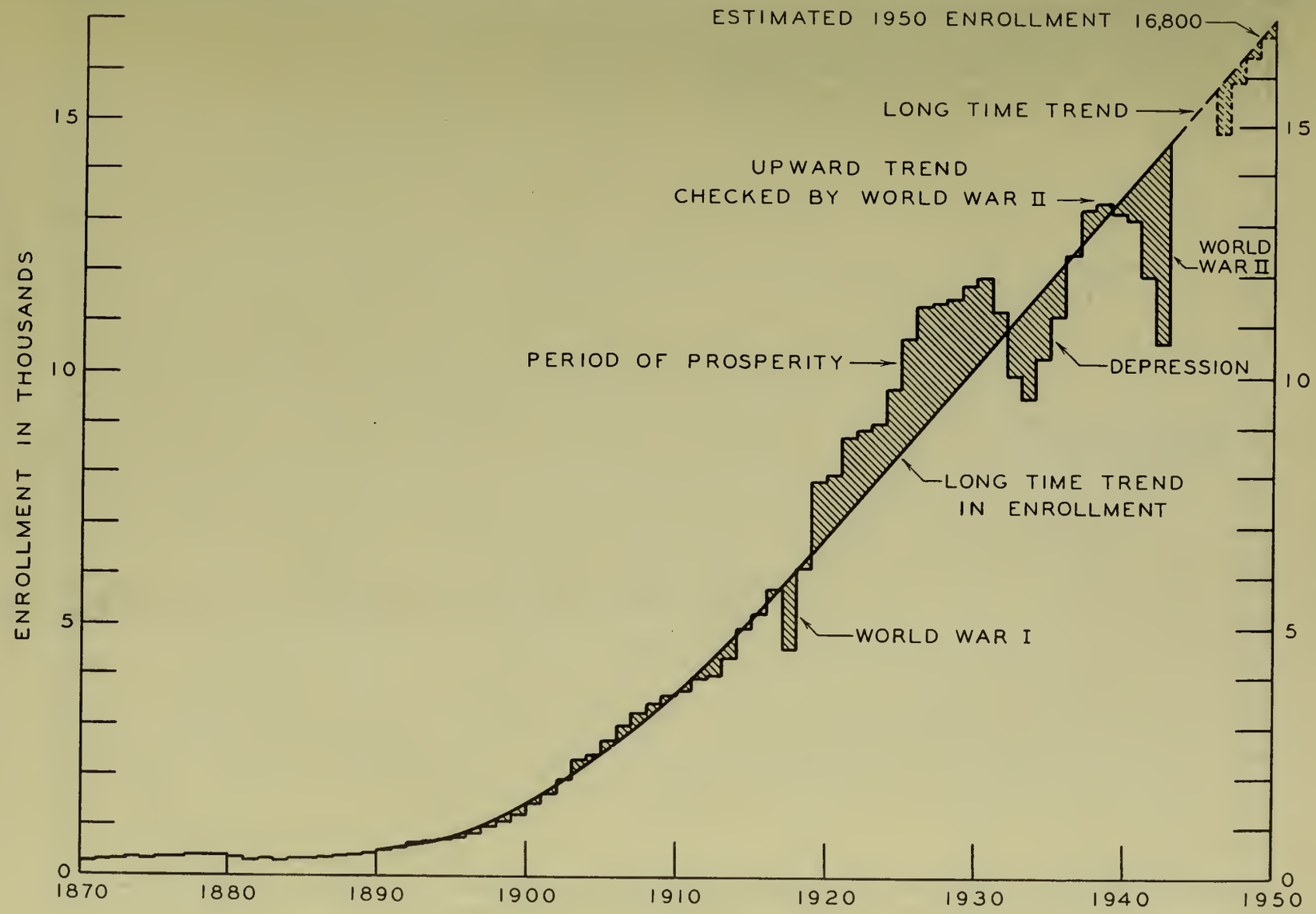
A chart showing the enrollment by years follows page 23. It will be noted that the enrollment was fairly constant until about 1888 and then started to increase at an accelerated rate until about 1920 when the average rate of increase become fairly constant as indicated by the line designated as the "Long-Time Trend". There was a marked decrease in the school year 1917-18 because of World War I but following the war the increase was very rapid until 1930-31 when the effects of the financial crisis in 1929 started a downward trend, which continued until the year 1933-34. At this time the enrollment began to recover rapidly until the peak enrollment of 13,380 was reached in 1938-39. Unsettled conditions in Europe, the beginning of World War II, the entry of this country into that war and especially the operation of the Selective Service Act, have caused sudden and continuing reductions since 1942. The chart shows quite clearly that enrollments fluctuate above and below the line which indicates the Long-Time Trend. This line indicates what the enrollment might have been if all conditions affecting enrollment had been "normal". In periods of prosperity the enrollments fall above this line and during the periods of war and depression they fall below. The normal increase in enrollment as indicated by the Long-Time Trend has been 330 per year since 1920. If the Long-Time Trend continues until 1950, the normal enrollment will be about 16,800 as indicated on the chart. The probable enrollment in 1950 has been given careful study and is discussed in paragraph 7, Predicted Enrollment.

Enrollment statistics include all who register during a year exclusive of Summer Session. The Maximum number registered at one time is about 95% of this enrollment.

STUDENT ENROLLMENT
With Floor Area, and Floor Area Per Student
Used For Teaching and Research on Urbana Campus
(Exclusive of Summer Session)

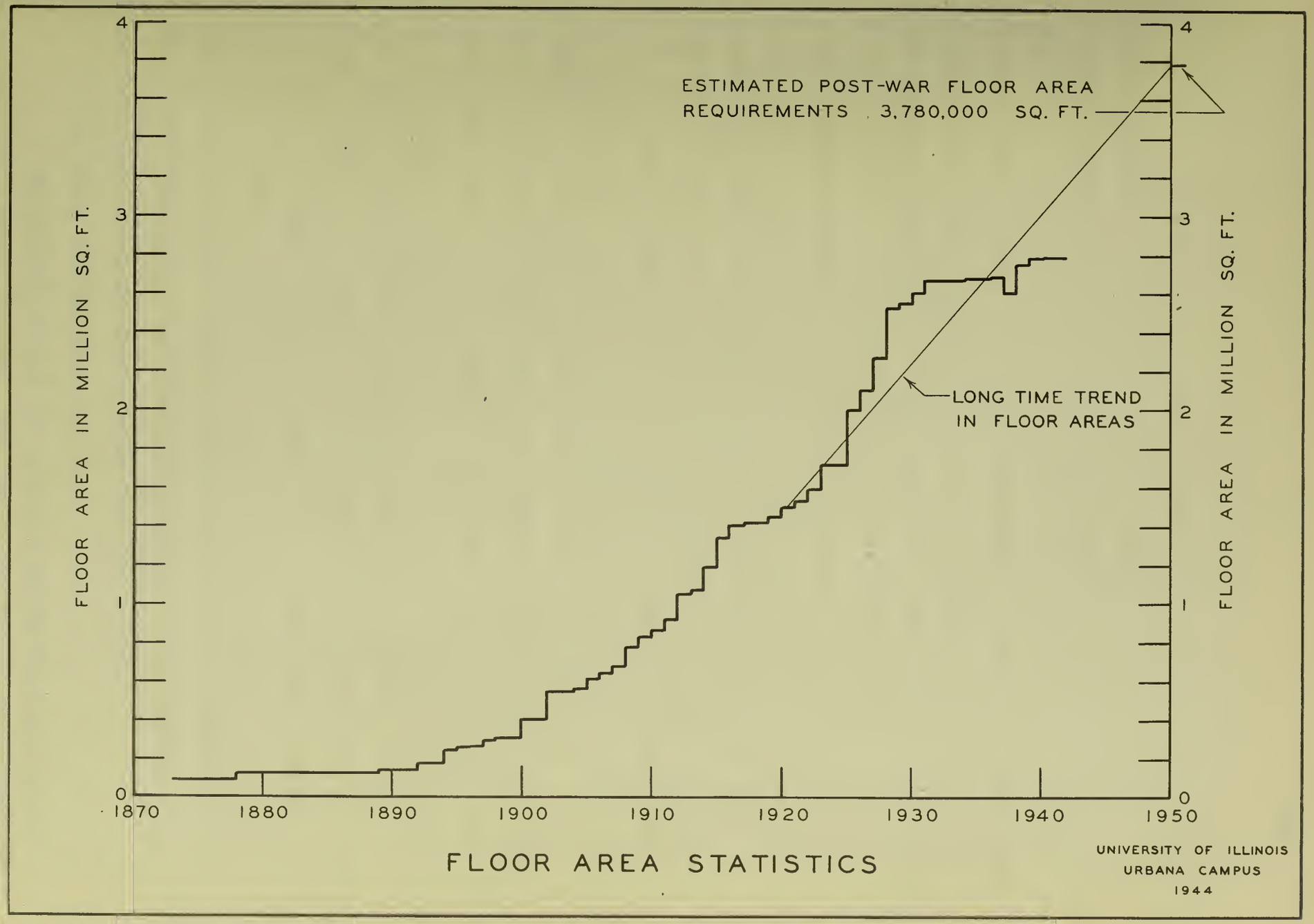
School Year	No. of Students	Floor Area Sq. Ft.	Sq. Ft. per Student	School Year	No. of Students	Floor Area Sq. Ft.	Sq. Ft. per Student
1867-1868	77			1905-1906	2,734	615,057	225
1868-1869	126	For the years		1906-1907	2,998	664,706	215
1869-1870	180	1867 to 1873		1907-1908	3,311	679,898	206
1870-1871	278	see page 8					
				1908-1909	3,506	769,588	220
1871-1872	381			1909-1910	3,677	832,970	226
1872-1873	400			1910-1911	3,776	860,315	228
1873-1874	405	97,300	240				
1874-1875	373	97,300	261	1911-1912	3,983	922,866	232
1875-1876	386	97,300	252	1912-1913	4,002	1,048,324	263
				1913-1914	4,351	1,065,775	268
1876-1877	388	97,300	251	1914-1915	4,952	1,191,275	241
1877-1878	404	120,960	300	1915-1916	5,282	1,337,376	254
1878-1879	416	120,960	391				
1879-1880	434	120,960	279	1916-1917	5,634	1,408,026	249
1880-1881	379	120,960	320	1917-1918	4,504	1,415,726	315
				1918-1919	6,153	1,415,726	230
1881-1882	352	120,960	345	1919-1920	7,847	1,452,298	183
1882-1883	382	120,960	317	1920-1921	8,006	1,511,488	188
1883-1884	330	120,960	367				
1884-1885	362	120,960	334	1921-1922	8,736	1,531,898	175
1885-1886	332	120,960	364	1922-1923	8,868	1,585,194	180
				1923-1924	8,956	1,717,941	192
1886-1887	343	120,960	352	1924-1925	9,666	1,717,941	179
1887-1888	377	120,960	370	1925-1926	10,741	2,019,687	188
1888-1889	418	120,960	289				
1889-1890	469	135,760	290	1926-1927	11,356	2,093,237	184
1890-1891	519	135,760	262	1927-1928	11,427	2,274,079	198
				1928-1929	11,500	2,526,969	220
1891-1892	583	135,760	233	1929-1930	11,737	2,547,529	218
1892-1893	714	178,205	251	1930-1931	12,008	2,603,604	217
1893-1894	718	178,205	249				
1894-1895	751	244,990	325	1931-1932	11,298	2,665,534	236
1895-1896	815	254,552	312	1932-1933	10,014	2,665,534	266
				1933-1934	9,498	2,665,534	280
1896-1897	862	257,917	300	1934-1935	10,365	2,672,914	257
1897-1898	1,012	292,747	291	1935-1936	11,170	2,672,914	239
1898-1899	1,117	312,427	280				
1899-1900	1,289	312,427	241	1936-1937	12,430	2,648,750	216
1900-1901	1,473	403,207	274	1937-1938	13,266	2,604,261	196
				1938-1939	13,380	2,754,727	205
1901-1902	1,669	403,207	241	1939-1940	13,181	2,787,559	211
1902-1903	1,975	539,997	274	1940-1941	13,108	2,787,559	213
1903-1904	2,299	550,397	239	1941-1942	12,120	2,792,619	230
1904-1905	2,483	557,597	225	1942-1943	10,161	2,792,619	260

The floor areas include only those of University Hall and subsequent buildings. Data on older buildings are given in Part I, paragraph 1.



ENROLLMENT STATISTICS

UNIVERSITY OF ILLINOIS
URBANA CAMPUS
1944



b. Floor Areas:

The significant floor area for the purpose of this report is the gross area devoted to teaching and research. This gross area is 2,790,000 sq. ft. and constitutes 84 per cent of the total floor area of all buildings on the campus. It includes all classrooms, lecture rooms, auditoriums and laboratories, which contribute directly to the teaching or research programs, and the Armory, gymnasium, power plant, storage and service areas, garages, barns, offices and administrative areas, halls, stairways, and toilets, which contribute indirectly to these programs. It does not include areas occupied by the State Surveys and areas devoted to the feeding and housing of students, to social and recreational activities or to student welfare such as the Residence Halls, Union Building, Skating Rink, Stadium and Hospital. The latter buildings serve very useful purposes but do not add to the floor area available for teaching and research.

From data given in the table on page 23, it may be determined that the average annual increase in the gross floor area, devoted to teaching and research, for the 30-year period from 1900 to 1930 was 74,000 sq. ft. This growth is shown graphically on the chart preceding page 24. For the 14-year period since 1930, the total increase in the gross floor area devoted to teaching and research has been only 190,000 sq. ft. or an average of 13,600 square feet per year. The deficiency during this period was, therefore, 74,000 - 13,600 = 60,400 sq. ft. per year. In 1938, there was a large decrease in floor area due to the razing of University Hall because of structural weaknesses. This reduction was offset in 1940 by the completion of Gregory Hall. The proposed program, which is to end in 1950, is designed to make up the deficiencies which have occurred since 1930 by providing for the increases which normally would have taken place during the 20-year period from 1930 to 1950.

c. Floor Area per Student:

The relation between the enrollment and the floor area devoted to teaching and research is shown on the chart on the following page where the

b. [illegible]

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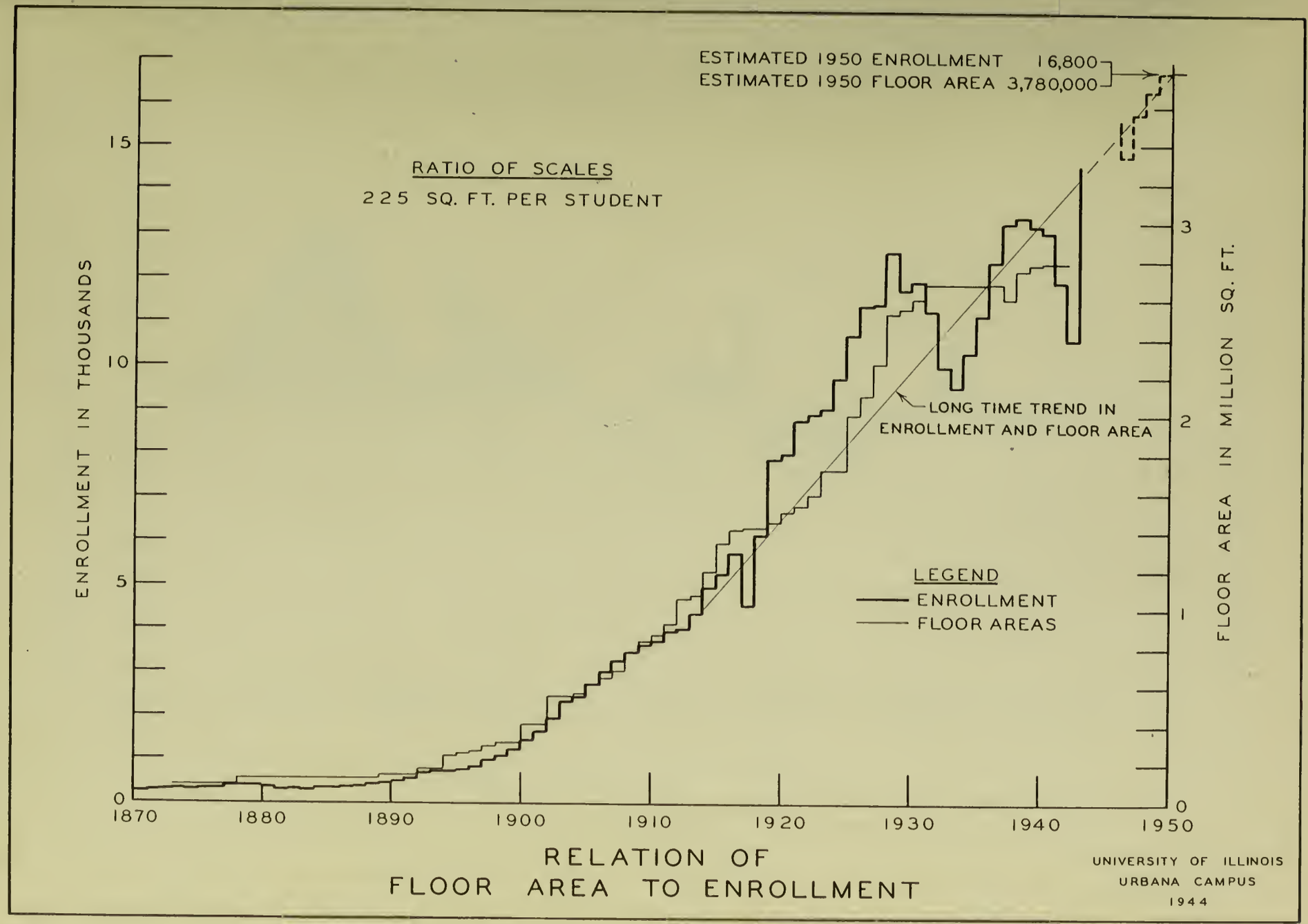
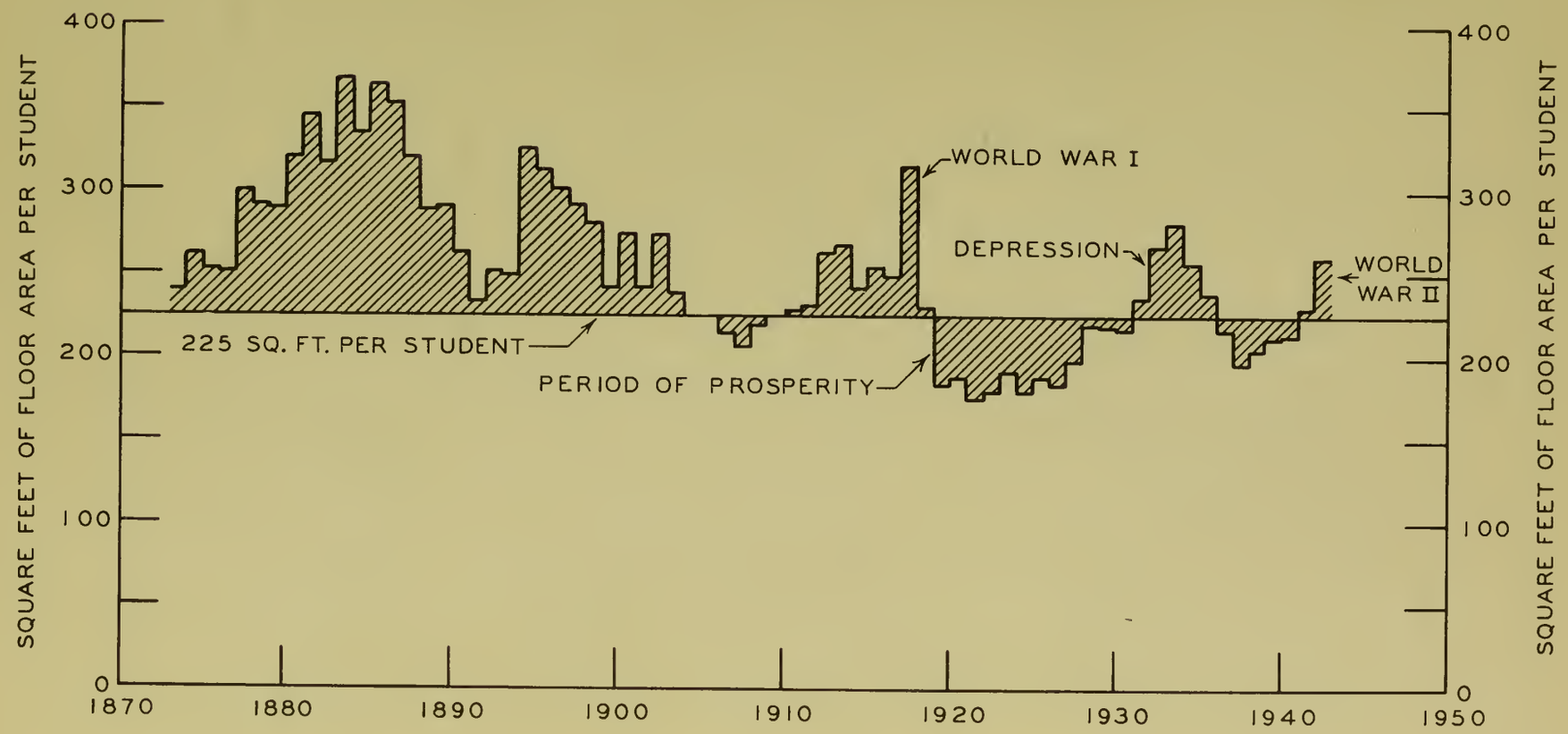


RELATION OF
FLOOR AREA TO ENROLLMENT



FLOOR AREA PER STUDENT

UNIVERSITY OF ILLINOIS
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1944

enrollment and floor area charts, previously given, are superimposed. These show graphically how new buildings have been consistently provided to keep pace with mounting enrollments. Since ordinates of the enrollment chart are "numbers of students" and of the floor area chart, "square feet", the degree of correspondence depends upon the ratio of the scales used. On this chart, the ratio of 225 square feet per student was found to give the best correspondence. This would indicate that this average ratio has prevailed through the years. Using this ratio, the line for the "long-Time Trend" in enrollment coincides with the line for the "Long-Time Trend" in floor areas. This relationship is shown more clearly by the next chart which gives the ratios of floor areas per student which have prevailed since 1873. It will be noted that since about 1905, the average ratio of floor area per student has been about 225 square feet. The actual numerical average is 224. These ratios are also given on page 23.

For the years preceding 1905, the ratios are high and are not considered significant. They are usually much higher than 225 and if the buildings built before University Hall were included in the chart, this condition would be more pronounced. The highest ratio, which reached a maximum of 364, occurred during the period from 1873 to 1892 when the relatively large area from University Hall was available, during a period when the enrollment actually decreased and then increased very slowly.

In the year 1891-92, the ratio of floor area per student fell to 223 after a long period during which much higher ratios had prevailed. At this time, an era of building started which was maintained until 1930, with the ratio fluctuating above and below the average of 225. These data indicate that experience has shown that this average ratio has been found to be necessary even though those who were directing the building policy of the University were not aware that they were attempting to maintain a given ratio. During periods of

war and depression the floor area per student has exceeded 225 and during the prosperous 1920's the ratio was below this value and, as was very apparent to those on the campus at that time, crowded conditions prevailed.

Experience has shown that the ratio of 225 square feet per student is necessary to maintain standards for the program of teaching and research which has prevailed on the Urbana campus at the University of Illinois but it should not be assumed that this ratio should prevail if substantial changes are made in that program or at institutions whose program differs from that at this institution. Instruction in agriculture and engineering requires more space per student than instruction in education, commerce, law and liberal arts. Laboratory sciences require a higher ratio than history, economics, rhetoric, etc. The programs of juniors and seniors require a higher ratio than those of freshmen and sophomores. Graduate work in general requires a higher ratio than undergraduate work. A highly developed program of research increases the ratio.

Because the conditions and programs at no two institutions are alike, comparative data are of little assistance in determining a proper ratio of floor area per student, however data from three institutions were obtained by the Committee for comparative purposes. The highest ratio was 260 which prevailed in an institution with programs in medicine and dentistry, as well as engineering and agriculture. The floor space devoted to hospitals was not included. After the space and students in the medical and dental programs were eliminated, the ratio was almost identical with that at Illinois. Another institution with an instructional program similar to that at Illinois but without agriculture and with a much smaller graduate and research program is planning its post-war program on 200 square feet per student for a fixed enrollment of 6,000 students. A third institution with an enrollment which is relatively high in

comparison with the population and resources of the state, with a relatively small graduate and research program and without a program in agriculture, has a ratio of 150 square feet of floor area per student. These data indicate that the ratio of 225 square feet per student is a reasonable one for the program now in operation at Illinois.

d. Equipment Costs:

A new building cannot be placed in operation until the necessary equipment is provided. Some of this equipment, such as heating, lighting and plumbing fixtures, is fixed and is considered a part of the building. Other special equipment such as testing machines, motors, generators and gas engines for instructional purposes, is fastened more or less permanently in place and should be considered a part of the building. Chairs, tables, desks and much minor special equipment is not attached to a building but is essential to its being useful and must be provided. All of these are included either in the building costs or as special equipment items in the projects which are submitted.

An estimate of the cost of special equipment which must be provided to make new buildings useful was obtained by dividing the present total cost of the University's equipment inventory, which is $8,500,000, by the total present floor space of 2,790,000 square feet to obtain a unit cost of about $3 per square foot of floor space. The total actually included in the requests is much less than this.

7. Predicted Enrollments.—The University of Illinois has already witnessed two periods of recovery from sharply reduced enrollments. During World War I and during the Great Depression it was freely predicted that colleges and universities would not recover. In both instances, however, the number of youth seeking a higher education increased beyond all expectation. Many of the

factors that led to the increases in 1920 and in 1935 are still significant. They are listed below:

a. The continued faith of the American people in the personal and social benefits that accrue from general and from technical training. Education remains an integral part of the American way of life.

b. In spite of age changes in the population brought about by a declining birth rate, a larger number of high school graduates is seeking advanced training.

c. The American standards of living have made and will continue to make it possible for youth to attend college in increasing numbers.

d. The increasingly technical character of our culture, the development of social and government service, the advances made in management and in transportation, and the demand for a greater number of professionally trained people in almost all areas will require an increased amount of education beyond the high school level. Special factors bearing on the immediate future are:

(1) Federal legislation which makes liberal provisions for the further education of veterans of the present war.

(2) Labor, management and the public at large are recognizing that a longer period of education is both an economical way of meeting the problems of unemployment, and a form of capital investment in the future of the country.

(3) The specialized training programs established by the Army and the Navy have stimulated the interests and abilities of hundreds of thousands of youth who would not otherwise have continued in any type of school.

When due allowance is made for these factors, it is reasonable to expect a major increase in the number of students in colleges and universities after the war. Based on general studies by the United States Office of Education

and on studies made by other institutions comparable with the University of Illinois, the following predictions are suggested as a reasonable point of departure for the projected building programs:

PAST AND PREDICTED ENROLLMENTS
On the Urbana and Chicago Campuses
1940 to 1950

Year	Urbana	Chicago	Total
1940-41	13,181	1,193	14,374
1941-42	12,120	1,291	13,411
1942-43	10,161	1,178	11,294
1943-44	8,324	1,056	9,380 (1)
1944-45	4,300	1,000	5,300 (2)
1945-46	9,500	1,000	10,500 (3)
1946-47	13,000	1,200	14,200 (3)
1947-48	15,500	1,200	16,700 (3)
1948-49	16,300	1,200	17,500 (3)
1949-50	16,800	1,200	18,000 (3)

(1) Including 3,221 Army and Navy trainees.
(2) Including 850 Army and Navy trainees.
(3) Totals include veterans eligible for education of college grade under federal legislation.

8. New Floor Area Needed.—On the basis of the predicted enrollment of 16,800 in 1950 and the ratio of 225 square feet of floor area per student, the new floor area required in 1950 for teaching and research may be determined as follows:

Total floor area required: 16,800 x 225 = 3,780,000 sq. ft.

Present floor area (see chart after p. 23)* 2,790,000

Net floor area required..... 990,000 sq. ft.

The chart on the following page presents these data graphically.

* Also see under "Floor Areas" on page 24.

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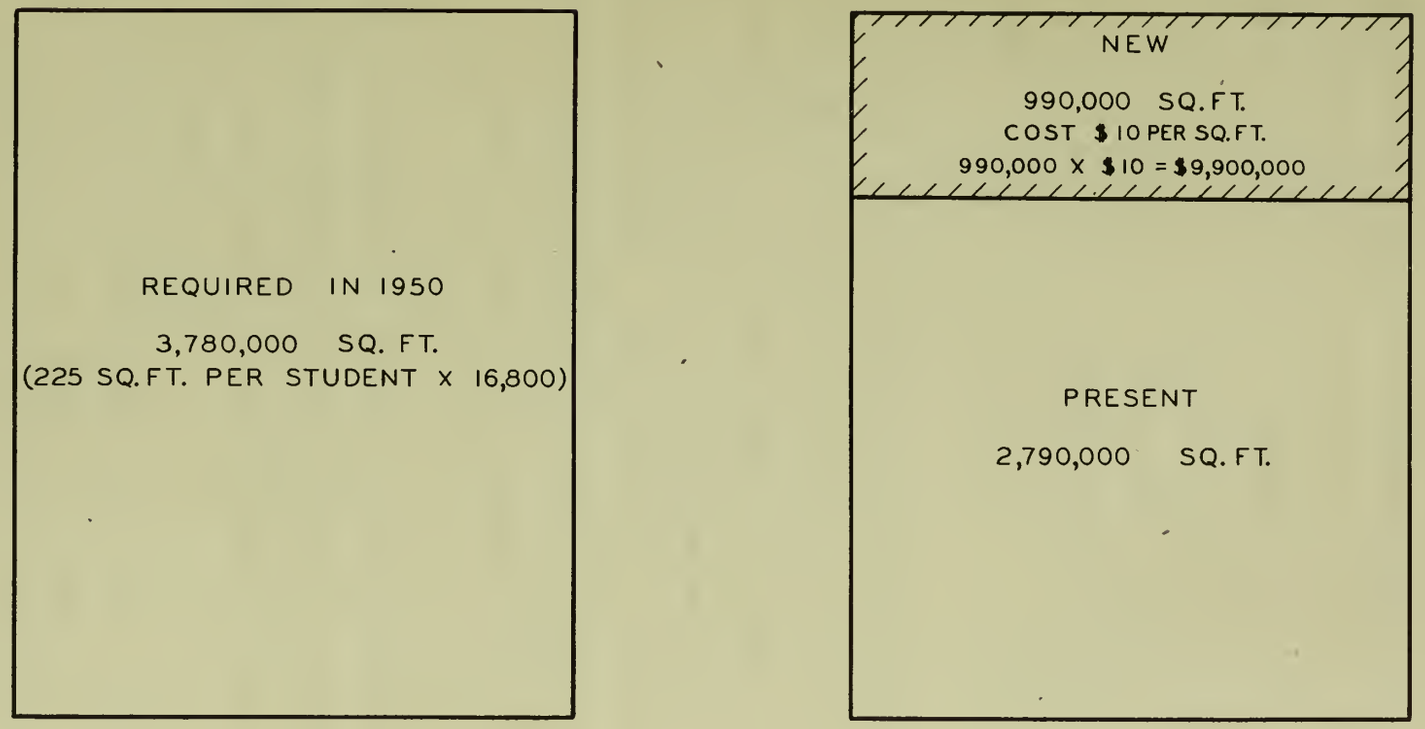


FLOOR AREA AND ESTIMATED COST OF
TEACHING AND RESEARCH BUILDINGS REQUIRED IN 1950
TO MAINTAIN PRESENT SPACE STANDARDS

UNIVERSITY OF ILLINOIS
URBANA CAMPUS
1944

This is the floor area required to provide for the "normal" enrollment in 1950 according to the "Long-Time Trend" of enrollment at the University. It is expected that for several years enrollments will be considerably above the long-time trend because of the return of the students whose education has been interrupted. However, it is not desirable to build to meet this abnormal condition which will not last. During the period of abnormal enrollments, even if all of the estimated space is provided, congested conditions will prevail. Policies which may be educationally undesirable may have to be adopted during this period but the solution should not be to provide adequate building space for the abnormal situation.

If it should so happen that the predicted enrollment is attained before 1950, steps will have to be taken to accelerate the construction of new space and if this enrollment is not attained until after 1950, the time when additional new buildings must be provided will be postponed until the enrollment catches up with the floor area available. There seems to be no possibility that a peak enrollment has suddenly been reached and that the space called for in this report will not be needed. Factors are in operation which may eventually retard the rate of increase of enrollment in universities and enrollment curves may eventually tend to flatten out. However, it seems probable that no significant change in the general trend will occur in the short period between now and 1950 especially with so many factors in operation now which tend to cause the rate of increase to become greater.

The estimate of 225 square feet per student and the total of 990,000 square feet is for new floor area required for teaching and research and does not include such buildings as residence halls and a Faculty-Graduate-Student Center which are only indirectly related to teaching and research. Also, this ratio and

this total do not provide for the Veterinary College which recently has been inaugurated by the Board of Trustees. The registration in this college will be small at first and gradually build up to the capacity of the buildings provided. During this period of growth the ratio of floor area per student will tend to drop toward the ratio of 225 square feet per student. However, if standards are maintained this ratio will not be reached because veterinary training requires much more space per student than the average of the programs now in operation.

If junior colleges develop in Illinois, there will be a tendency for the University to become an institution for advanced undergraduate and graduate training and with increased research programs. This trend will tend to increase the floor area required per student. In any case, it seems certain that the research program will continue to increase, and bring with it an increase in the floor area required per student.

In order to keep the total new floor area available in 1950 for present programs within the 990,000 sq. ft. which would provide for the predicted enrollment for that year, many requests for new floor area have been included and most of the others have been only partially complied with. For comparisons of requested and alloted floor areas see page 40.

9. Cost Per Square Foot of Floor Area.—The estimated cost per square foot of floor area for new buildings constructed during the period 1945-50 has been developed for each project by making use of the costs of similar projects previously constructed by the University and adjusting for future increases in construction costs.

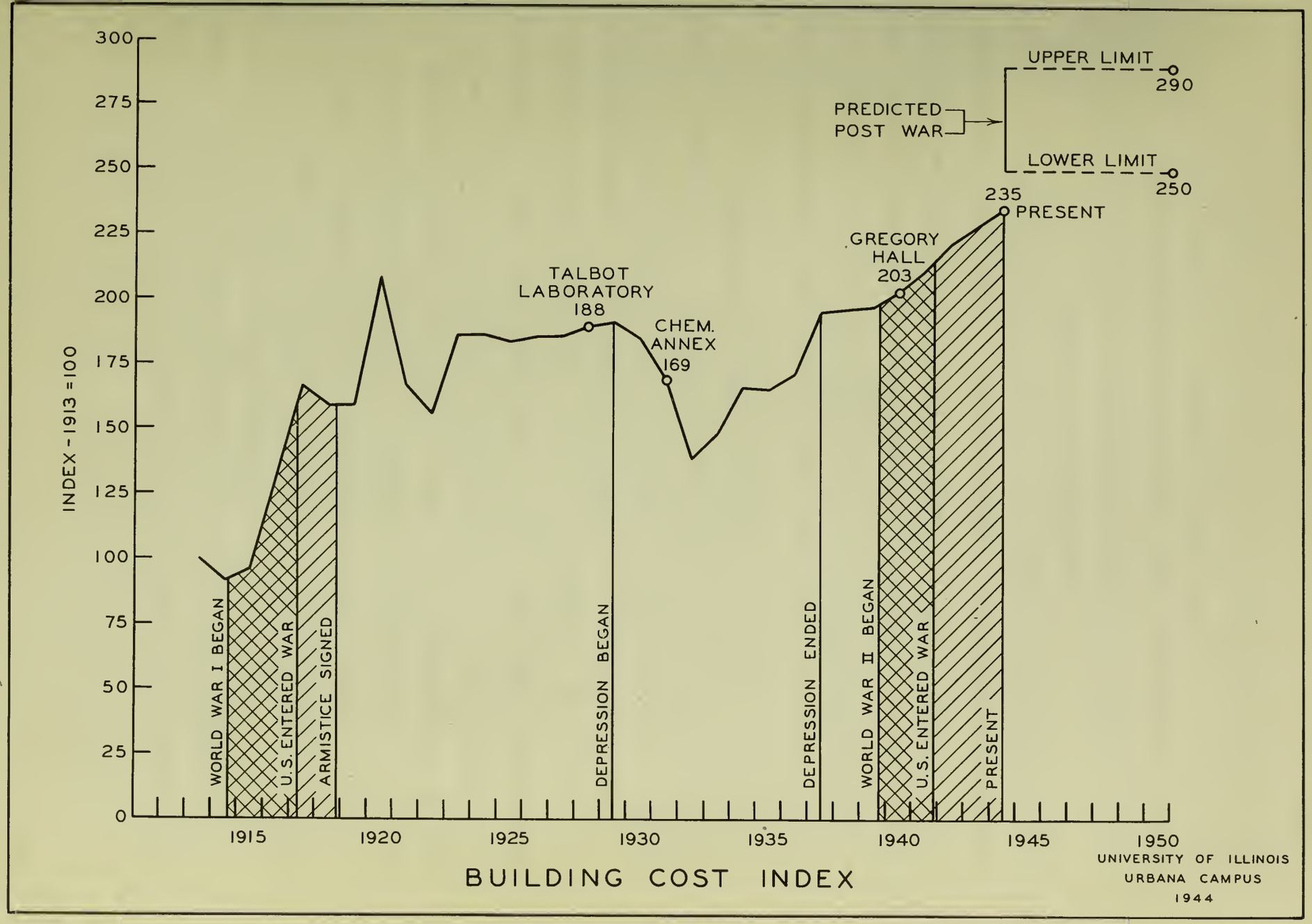
The estimates on future increases in construction costs have been based on the Building Cost Index of the Engineering News-Record, as given in the April 20, 1944 issue. It is predicted by that authority that construction costs in the early part of the post-war period, when normal construction gets under

way, will probably be from 25 to 45 per cent over the level of the period from 1938 to 1940. In this report, a factor of 37 per cent has been used for this adjustment. The unit cost for each project will vary widely, of course, with the type of construction, use, and other factors.

The Engineering News-Record Building Cost Index chart is given on the following page. It will be noted that the average index for the period from 1938 to 1940 was 200. If this is increased by 25 to 45 per cent to obtain the predicted post-war index, that index will be from 250 to 290 as shown on the chart. Using an intermediate increase of 37 per cent, the post-war index of 1.37 x 200 = 274 is obtained for use in this report.

The cost indexes for three of the present buildings are shown on the chart. In 1928 when Talbot Laboratory was constructed, the index was 188; in 1931, when the Chemistry Annex was constructed, the index was 169; and in 1940, when Gregory Hall was constructed, the index was 203.

10. Cost of Proposed New Buildings and Additions.--In the preliminary estimates which were given in the Summary Report of March 18, 1944, prepared by the Committee, an average cost of $10 per square foot was used but it was stated that "It seems quite probable that the post-war cost of buildings may be more nearly $12 per square foot". Subsequent studies made after additional information became available indicate that $12 per square foot is a better value than $10 per square foot. However, the original estimates have been adhered to. The square foot of floor area is a convenient unit for use in determining the necessary floor area. However, a unit cost which is more commonly used for preliminary estimates than the cost per square foot of floor area, is the cost per cubic foot of volume included between the outer surfaces of the building. The relation between the two depends upon the story heights and other factors. The assumption that cubic foot costs are about one-sixteenth of the square foot costs is reasonable for University buildings. Ten dollars per square foot, therefore, corresponds to 10/16 = 63 cents per cubic foot.



In paragraph 8 of this section, it was estimated that 990,000 square feet of new floor area would be required for present programs of teaching and research for the enrollment predicted for 1950. On the basis of $10 per square foot, the cost of buildings and additions to provide this new floor area would be

990,000 x 10 = $9,900,000

The total cost of the "Preferred" new building and addition projects included in the program which is being submitted to the Post-War Planning Commission has been kept within this total. However, it must be realized that no space has been provided in addition to that actually needed to maintain the ratio of floor area per student which experience has shown to be necessary. Also, it must be realized that a low cost per square foot of floor area has been used.

11. Remodeling and Deferred Maintenance.—In order to conserve the State's investment in the University's buildings, it is necessary to make continual repairs and replacements of various parts of these structures. The life of some parts such as roofs, mechanical equipment and flooring materials is relatively short while other parts will last indefinitely if the structure of the building is sound. Some parts become obsolete while still in sound condition. This has been particularly true of lighting, heating and plumbing equipment. The average illumination in the drafting rooms of University buildings is from 8 to 10 foot candles while industry now recognizes illumination of 50 or more foot candles as standard. Similar deficiencies in lighting prevail in the classrooms, offices, and libraries throughout the campus. The lighting system is obsolete and should be replaced although it is still capable of rendering service. Its life is limited by obsolescence and not by physical failure. Similar comments can be made concerning many other parts of the various buildings.

A reasonable average useful life for the various parts of a building may be assumed as fifty years. On this basis, two per cent of the replacement cost of all buildings should be provided for maintaining them in effective service and protecting the investment. In the past, the University has spent only about one per cent for these purposes. There is, therefore, a large accumulation of deferred maintenance. Conditions have been particularly bad since 1930 because of the shortage of funds during the depression years and the scarcity of materials and labor during the war years. The Committee is recommending that one per cent of the investment cost of 20 million dollars be provided for deferred maintenance for the fifteen-year period from 1930 to 1945. This would mean a sum, therefore, of

$$0.01 \times 15 \times 22{,}000{,}000 = \$3{,}300{,}000$$

The final amount determined by careful study is about $2,900,000. The investment cost has been used in the above computation. If the replacement cost were used, as it really should be, this item would probably be about $4,500,000.

The major deficiency in the University's building space is the laboratories, most of which are between forty and fifty years old. In the early nineteen hundreds the University's laboratories were outstanding among those located in the universities of the country. As the years have passed, other institutions have constructed laboratories which have taken advantage of modern developments. Because of its early appreciation of the value of laboratories, the University of Illinois is now in an inferior position in this respect.

Rather than to attempt to recondition the old laboratories, much better results will be secured by constructing new laboratories and remodeling and modernizing some of the present laboratory space into classrooms to provide for the expected increases in enrollment. In addition to the better results obtained, by this procedure, the cost would probably be little if any greater than that of

reconditioning the old laboratories. For this reason, laboratories predominate in the new building projects which are proposed.

The use of many buildings will remain unchanged. In this program, it is proposed to modernize some of these buildings so as to bring them up to present standards. It is proposed to improve the health and safety conditions in present buildings as nearly as possible to the requirements of

The National Board of Fire Underwriters,

The State Department of Public Health, and

The National Building Code and Safety Requirements.

Definite recommendations have been made by these agencies. It is imperative that the University take steps to conform to certain of these recommendations or it will be in an indefensible position in case fatal accidents should occur, because of defects which were known to exist.

If buildings were adequately maintained, the demand on the part of the faculty for new quarters would be much less insistent.

12. Utilities and Distribution Systems.--Although the University Power Plant at Urbana is relatively new, additions to the plant and the distribution systems are now necessary to complete the original program of expanding the distribution system to reduce back pressure at the plant; reduce pressure drop in the system; insure continuous service to the various buildings, and provide sufficient capacity for the present and future loads as well as distribution service lines to the proposed new buildings.

Additions are also requested for water production, storage, and distribution to insure adequate supply and fire protection for existing buildings. Further expansion is, of course, necessary to provide for the new buildings.

13. Campus Improvements.—Additional streets, sidewalks, and landscaping are requested to meet increased traffic on the campus and for the projected new buildings. All such improvements conform to a long established, but continuously studied, campus plan.

14. Operation and Maintenance.—The Physical Plant Department has made a study of present operation and maintenance costs and has made recommendations concerning the allowances which would avoid "deferred maintenance". The present schedule for operation and maintenance and that recommended for the future are given in the following table in terms of cents per square foot of floor area per year:

OPERATION AND MAINTENANCE SCHEDULE
Values are in Cents per Square Foot of Floor Area per Year

Item	Present	Proposed
Building Operation.....	6.6	6.6
Building Maintenance.....	8.4	22.4
Electricity and Power.....	0.7	1.7
Steam.....	4.8	4.8
Water.....	1.0	1.0
Indirect Costs: Includes gas, fire protection and safety, police and watchmen, general maintenance, grounds administration, trucks and cars.	7.6	7.6
Total.....	29.1	44.1
Approximate value.....	30	45

On the basis of an average post-war construction cost of from 10 to 11 dollars per square foot, the proposed amount for operation and maintenance allowance of 45 cents per square foot would be from four and one-half to four per cent of the construction cost. The present allowance of 30 cents per square foot is about four per cent of the average investment cost of the buildings in the campus. Because of the gradual rise of construction costs throughout the life of the University, the reproduction costs for present buildings would be about fifty per cent above the investment costs. In general, it would seem that an annual allowance of four per cent of the construction cost of proposed building or of the reproduction rather than the investment cost of present buildings would be adequate for any consideration of the over-all aspects of the proposed building program on the Urbana campus.

15. Land Acquisition.—A minimum program of land acquisition is proposed to provide land necessary for the new buildings proposed in this program.

All studies for the campus development emphasize the need of expanding the campus east and west between Green Street and Armory Avenue. This is needed to reduce student and faculty pedestrian travel, to distances which can be traversed in the ten-minute interval between classes, to permit grouping of buildings housing functions of related interests for more effective operation, and to permit the construction of additions to existing buildings in order to provide additional space to accommodate increases in enrollment.

PART II

THE URBANA CAMPUS

SECTION B

PROPOSED PROJECTS

PART II. THE URBANA CAMPUS

SECTION B. PROPOSED PROJECTS

Introduction.—In the preceding section the general considerations which have entered into formulating the building program for the Urbana Campus are given. In this section, the specific projects which enter into that program are first summarized and then presented in detail.

Summary of Projects.—The Summary of Preferred Projects follows page 41. In this summary Projects No. 1 to 14 are arranged by Colleges, Projects No. 15 to 22 are classed as General Projects because they serve all parts of the University, Projects No. 23 to 39 serve the entire University but are administered by the Physical Plant Department, and Project No. 40 is of general interest although proposed by the Athletic Association. This project is not administered by the Physical Plant Department as indicated in the Summary. The Summary includes (1) the class to which each project belongs, as described on pages x to xiii and summarized on page xiv, (2) the estimated cost of new, modernized or remodeled building space, (3) the estimated cost of any land which has to be acquired for the project, (4) the estimated cost of special equipment of types which are not ordinarily included in the cost of a building but are included on the University's inventory, (5) the estimated cost of all architectural and engineering services including the preparation of plans and specifications and the supervision of construction, (6) the total estimated cost, and (7) the estimated additional cost of building operation and maintenance which does not include the cost of additional educational and research staffs or programs. The estimated cost of equipment for the Power Plant and the distribution systems in Projects No. 23 and No. 24, is included under equipment because of the special

conditions in these projects. However, such equipment is not carried on the University inventory. In parts of the report where the cost of architectural and engineering services are not listed separately, they are included in the building cost. Also, the cost of equipment for Projects No. 23 and No. 24 is usually included in the building cost.

Summary of Desirable and Deferrable Projects.--The Desirable and Deferrable Projects are listed on pages 42 and 43. Prospectuses for these projects were not submitted to the Illinois Post-War Planning Commission. In general, it has been necessary to reduce the size of preferred projects considerably below the requested sizes even though, in most cases, the requested sizes could be justified. Also, it has been necessary to omit from the preferred list many projects which are urgently needed. These reductions and omissions were made because the total cost of the preferred projects was becoming so large. It seems quite probable that enrollments will make it necessary to ask the Legislature for appropriations for some of the desirable projects even though they are given this classification in the program submitted to the Post-War Planning Commission.

Comparisons of Requested and Allotted Floor Areas.--The extent to which the sizes of preferred projects have been reduced is indicated by the statistics given on page 44 for certain projects. The table on this page shows (1) the present floor area occupied by the department or other administrative unit sponsoring a project, (2) the new floor area requested, (3) the present floor area to be retained after the completion of the proposed project, (4) the funds allotted to each project, by the Committee, (5) the estimate of the cost per square foot of floor area, made by the Physical Plant Department, (6) the floor area which it is estimated can be constructed with the allotment, and (7) the sum of the retained and allotted areas. All floor areas are gross and include

the areas of halls, stairways, toilets, etc. It will be noted that the allotted areas are very much lower than the requested areas except in Projects No. 14 and No. 20 where the areas of proposed additions are fixed by the areas of corresponding additions or other architectural requirements. However, in most cases, a comparison of the present areas with the retained plus allotted areas will indicate that some increase in floor area available to the department has been provided for even though the increases are not as large as they should be.

Campus Maps.—Following page 44 are four pages of campus maps printed on transparent paper. The fourth map, printed in black, shows existing campus buildings. The third map, printed in red, shows the buildings included in the preferred projects. By inserting a blank sheet of paper under this map, the proposed locations for the preferred buildings can be seen and by removing the blank sheet and placing the third map over the fourth map, the relation of the location of the preferred buildings to those of the existing buildings is seen. The locations of desirable buildings are shown in green on the second map and possible locations of other buildings, including those classed as deferrable, are shown in black on the first map. These can be examined separately. By superimposing all of the transparent pages, the "ultimate" developments of the campus can be visualized.

A map of the campus showing all of the classes of buildings is bound just inside of the back cover of this report.

Description of Projects.—Each preferred project is described on the pages which follow. These descriptions give estimated cost of the building, which includes the cost of architectural and engineering services. The cost of land is not included. Other topics covered in each description are: Basic

reasons for project, location, use, description, justification, relation to other projects, priority, biennium for which its construction is scheduled and the estimated increase in cost of building operation and maintenances. The latter does not include the cost of increases in teaching or research staff. The former is determined by increased enrollment rather than new building space and the latter is determined by the extent of the research programs rather than by the new floor area.

SUMMARY OF PREFERRED PROJECTS

Proj. No.	Name of Project	Class[1]	Estimated Cost: Building	Land	Equipment	Arch. & Eng.	Total	Additional Annual Operating Cost[2]
	College of Liberal Arts & Sciences							
1	Chemical Engineering Building	1	$ 470,000		$ 115,000	$ 30,000	$ 615,000	$ 26,000
2	Chemical Laboratories	1	940,000		100,000	60,000	1,100,000	40,000
3	Noyes Laboratories	2	516,000			33,000	549,000	.....
	College of Agriculture							
4	Home Economics Building	1	658,000	$69,000	75,000	42,000	844,000	28,000
5	Animal Husbandry Laboratory	1	357,000		55,000	23,000	435,000	15,000
6	Dairy Husbandry Laboratory	1	235,000		25,000	15,000	275,000	10,000
	Veterinary College							
7	Veterinary Building	4	1,410,000			90,000	1,500,000	60,000
	College of Engineering							
8	Electrical Engineering Building	1	705,000		125,000	45,000	875,000	30,000
9	Mechanical Engineering Building	1	940,000	58,000	175,000	60,000	1,233,000	40,000
10	Betatron Laboratory	4	150,000		1,500,000	50,000	1,700,000	14,000
11	Aeronautical Engineering Laboratory	4	127,000		75,000	8,000	210,000	.....
	College of Fine & Applied Arts							
12	Fine Arts Building	1	658,000		40,000	42,000	740,000	28,000
	College of Education							
13	Laboratory Schools Building	1	658,000	16,000	75,000	42,000	791,000	28,000
	School of Physical Education							
14	Woman's Gymnasium Addition	1	155,000		10,000	10,000	175,000	6,500
	General Projects							
15	Band Building	1	188,000		20,000	12,000	220,000	8,000
16	Library Addition	1	645,000		10,000	40,000	695,000	27,000
17	Residence Halls	3	2,748,000	72,000		180,000	3,000,000	(3)
18	Health Service Station	1	209,000		20,000	13,000	242,000	8,000
19	University Press Building	1	564,000	15,000	75,000	36,000	690,000	24,000
20	Hospital Addition	1	214,000		50,000	14,000	278,000	37,000[4]
21	Administration Building Addition	1	404,000		15,000	26,000	445,000	17,000
22	Faculty Graduate-Student Center	3	470,000		30,000	30,000	530,000	20,000
	Physical Plant Department							
23	Addition Capacity at Abbott Power Plant	1	150,000		460,000	40,000	650,000	(5)
24	Addition to Distribution Systems	5	408,000		629,300	65,500	1,102,800	(5)
25	Improvements to Meet Code Safety Requirements	2	124,000		12,000	9,000	145,000	.....
26	State Department of Public Health Recommendations	2	36,000		20,000	4,000	60,000	2,500
27	Remodeling the Stock Pavilion	2	70,000			5,000	75,000	.....
28	Modernization of Eleven Existing Buildings	2	1,728,870			88,000	1,816,870	30,000
29	Improvements Recommended by the National Board of Fire Underwriters	2	104,330		21,000	6,000	131,330	17,510
30	Acoustical Treatment of Buildings	2	72,000			3,000	75,000	.....
31	Physical Plant Service Building	1	611,000		40,000	39,000	690,000	41,400
32	Volatile Storage Plant	1	30,000		41,000	4,000	75,000	4,500
33	Elevator Replacement	2			16,000		16,000	.....
34	Water Station Improvement	5	78,000		35,000	7,000	120,000	(5)
35	Sewer Extensions	5	78,000			4,000	82,000	.....
36	Telephone (Bell) Service Expansion	5	4,000		58,000	1,000	63,000	(5)
37	Repaving Streets	6	62,000			3,000	65,000	.....
38	New Sidewalks	6	11,000			1,000	12,000	.....
39	Landscape Improvements	6	61,000			3,000	64,000	.....
40	Health & Physical Education Building	4	1,935,000		250,000	115,000	2,300,000	112,500
	TOTALS		$18,984,200	$230,000	$4,172,300	$1,298,500	$24,685,000	$674,910

[1]Classes are described on pages x to xiii and project costs are summarized by classes on page xiv.

[2]Includes only costs of building operation and maintenance, except a fund of $27,000 is included for staff additions for Project 20, Hospital Addition.

[3]Paid from income.

[4]Partially paid from income.

[5]Included in other projects.

SUMMARY OF DESIRABLE AND DEFERRABLE PROJECTS

Proj. No.	Name of Project	Estimated Cost Building	Equipment	Arch. & Eng.	Total
	DESIRABLE PROJECTS				
	College of Liberal Arts & Sciences				
101	Chemical Laboratories, 2nd Unit	$ 470,000	$ 20,000	$ 30,000	$ 520,000
	College of Agriculture				
102	Agricultural Engineering Bldg..	470,000	100,000	30,000	600,000
	College of Engineering				
103	Physics Building Addition.....	564,000	50,000	36,000	650,000
104	Mechanical Engineering Building, 2nd Unit.....	752,000	100,000	48,000	900,000
	College of Fine & Applied Arts				
105	Music Building Addition.....	376,000	20,000	24,000	420,000
	School of Physical Education				
106	Huff Gymnasium Addition.....	470,000	10,000	30,000	510,000
	General Projects				
107	Library Addition, Stack & Wing	645,000	10,000	40,000	695,000
108	Administration Building Addition	405,000	10,000	25,000	440,000
109	Receiving Station.....	188,000		12,000	200,000
110	Radio Station.....	94,000	50,000	6,000	150,000
	Physical Plant Department				
111	Building Modernization.....	564,000		36,000	600,000
112	Utilities & Grounds Improvement	658,000		42,000	700,000
	Total.....	$ 5,656,000	$370,000	$359,000	$ 6,385,000
	DEFERRABLE PROJECTS				
	College of Law				
201	Law Building.....	$ 480,000	$	$ 20,000	$ 500,000
	College of Liberal Arts & Sciences				
202	Biology Laboratories.....	470,000	50,000	30,000	550,000
	College of Agriculture				
203	Agronomy Greenhouse.....	33,000		2,000	35,000
204	Horticulture & Forestry Greenhouse	11,000		1,000	12,000
205	Home Economics Bldg., 2nd Unit	282,000		18,000	300,000
	College of Engineering				
206	Electrical Engineering Building, 2nd Unit.....	470,000	50,000	30,000	550,000
207	Aeronautical Engineering Building	564,000	100,000	36,000	700,000

(Continued on the next page)

DEFERRABLE PROJECTS (Continued)

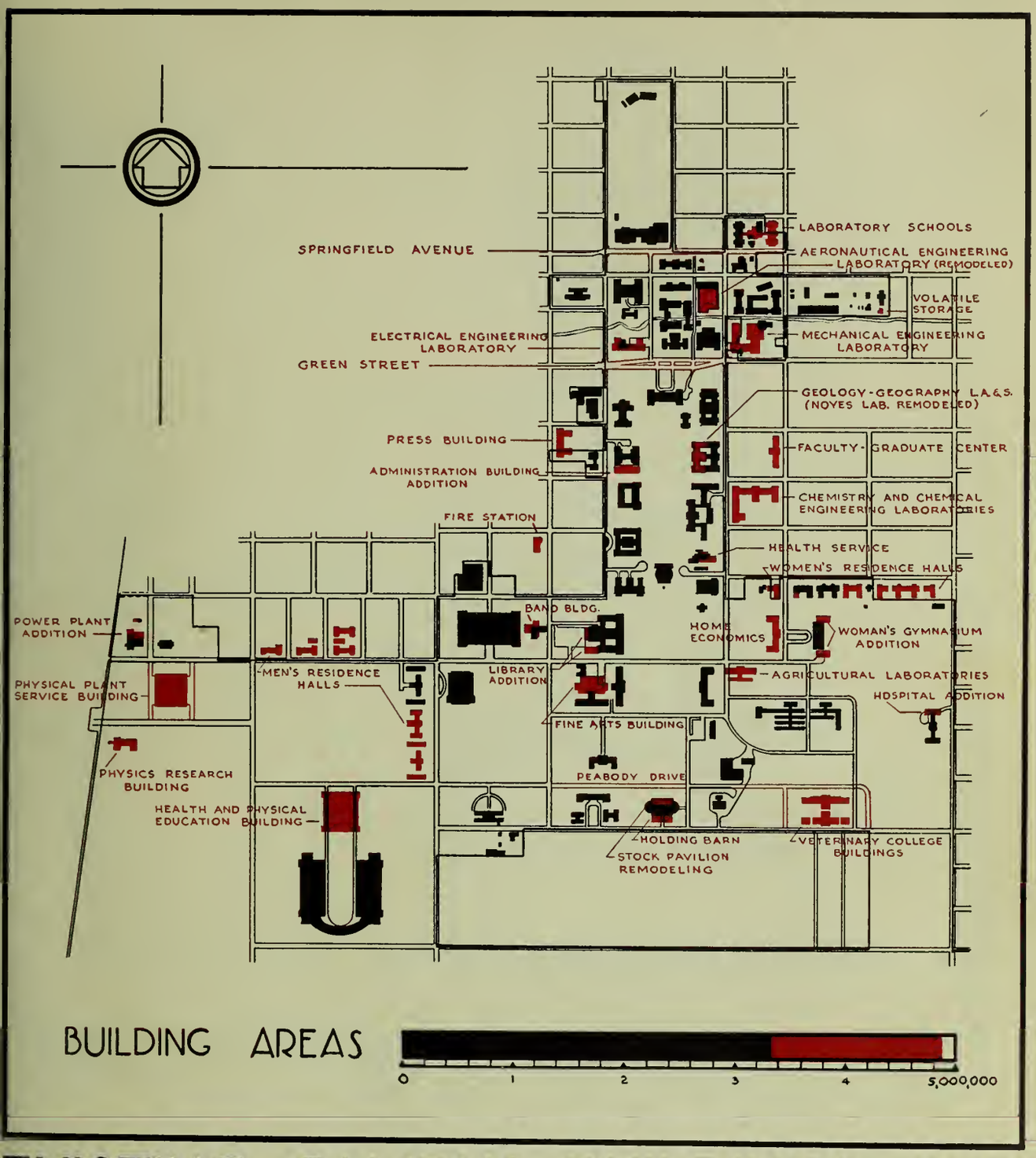
Proj. No.	Name of Project	Estimated Cost Building	Equipment	Arch.& Eng.	Total
	College of Fine & Applied Arts				
208	Fine Arts Building, 2nd Unit	$ 282,000	$	$ 18,000	$ 300,000
	College of Education				
209	Laboratory Schools Building, 2nd Unit.....	658,000	50,000	42,000	750,000
	General Projects				
210	Continuation Study Center....	282,000		18,000	300,000
211	Auditorium.....	940,000		60,000	1,000,000
212	Power Plant Addition.....	470,000		30,000	500,000
213	Residence Halls.....	2,820,000		180,000	3,000,000
	Physical Plant Department				
214	Remodel Present Service Building	141,000		9,000	150,000
	Total.....	$7,903,000	$250,000	$494,000	$8,647,000

PRESENT, REQUESTED, RETAINED, ALLOTTED AND TOTAL AREAS
OF CERTAIN PREFERRED PROJECTS ON URBANA CAMPUS

This table includes data on the gross floor areas now occupied by the activities concerned, the gross floor area requested, the present area retained, the funds allotted by the Committee for building and architectural and engineering services only, the post-war square foot costs estimated by the Physical Plant Department, and the floor areas which can be constructed based on the allotments and the cost estimates. The appropriations made for projects will be in dollars and not floor areas. The allotted area is given for comparative purposes but must be adjusted to actual costs.

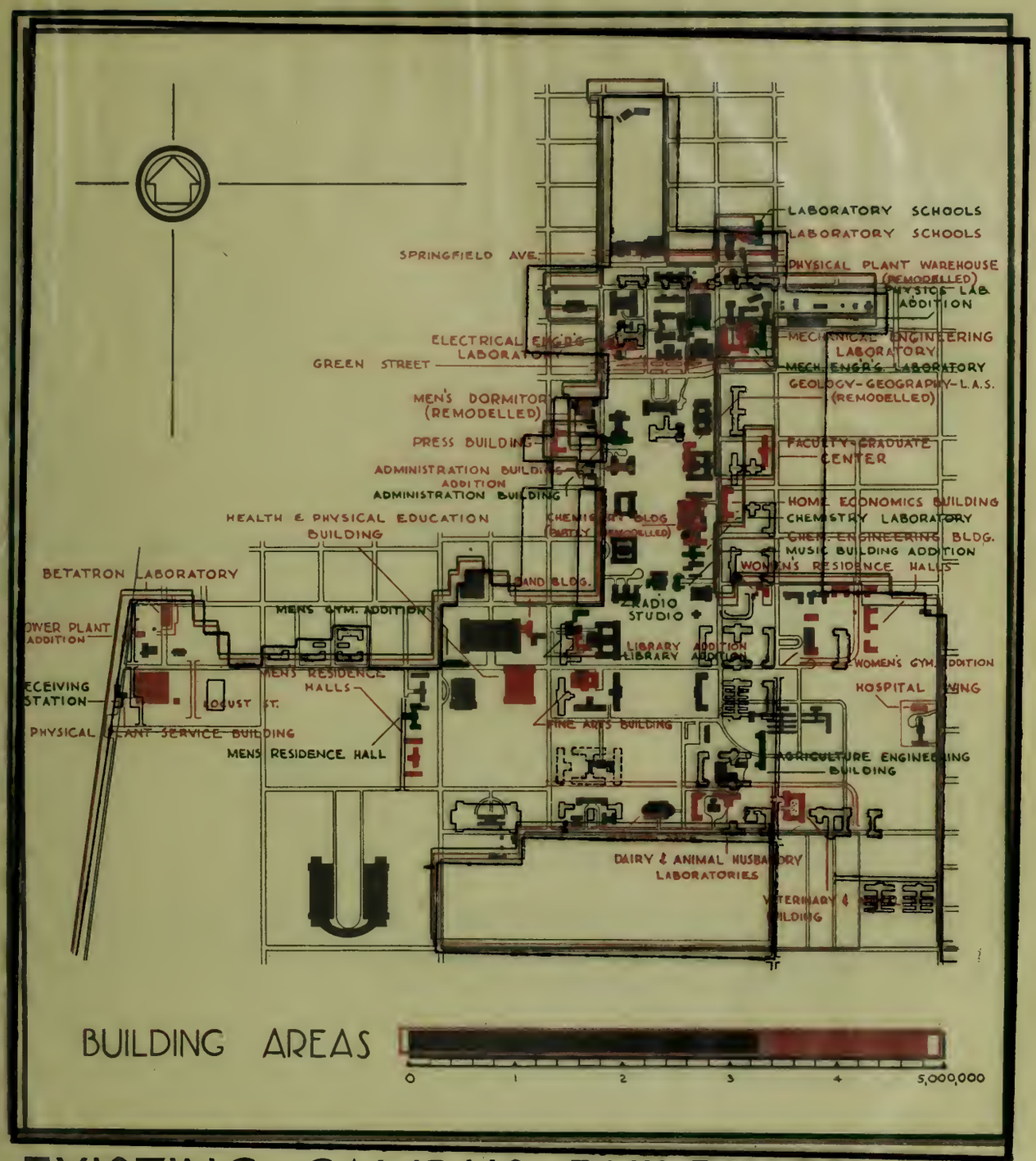
Proj. No.	Name of Project	Present Area	Requested Area	Retained Area	Committee Allotment	Sq.Ft. Cost	Allotted Area	Retained plus Allot.
1	Chemical Engineering Building.	31,260	67,000	----	500,000	11.00	45,400	45,400
2	Chemical Laboratories (1).....	149,240	200,000	116,900	1,000,000	11.50	87,000	200,000
4	Home Economics Building.....	50,270	133,000	----	700,000	11.50	60,800	60,800
5	Animal Husbandry Laboratories.	21,660	52,650	4,500	380,000		37,750	42,000
	Meats Laboratory (2).....							
	Animal Nutrition Lab.....					11.00	(28,200)	
	Holding Barn.....					8.00	(6,250)	
	Machinery Shed.....					6.00	(3,300)	
6	Dairy Husbandry Laboratories..	47,240	48,500	34,140	250,000		24,500	58,640
	Chem. & Bact. Labs.(2).....					11.50	(17,900)	
	Dairy Barn Addition.....					6.00	(6,600)	
8	Electrical Engineering Building	55,070	126,400	20,500	750,000	10.000	75,000	95,500
9	Mechanical Engineering Building	84,380	187,500		1,000,000	9.50	105,100	105,100
12	Fine Arts Building.....	86,350	87,000	65,180	700,000	10.50	66,600	131,780
13	Laboratory Schools Building...	45,730	225,000	40,430	700,000	12.00	58,300	98,730
14	Women's Gymnasium.....	82,900	22,000	61,930	165,000	7.50	22,000	83,930
15	Band Building.....	8,188	18,300		200,000	11.00	18,300	18,300
16	Library Additions.....	278,710		278,710	685,000		66,000	344,710
	Wing.....		44,000			12.50	(29,600)	
	Stack.....		74,000			8.50	(37,000)	
17	Residence Halls (4).....	204,718	500,000	211,150	3,000,000	12.50	240,000	451,150
19	University Press Building (3).	23,670	69,330		600,000	11.00	54,500	54,500
20	Hospital Addition.....	42,100	13,300	42,100	228,000	17.50	13,100	65,200
21	Administration Building Add...	68,440	82,000	68,440	430,000	10.50	41,000	
31	Physical Plant Service Bldg...	60,700	112,670		650,000	9.00	72,200	72,200
40	Health & Physical Education Bldg.		215,000		2,300,000	10.00	230,000	230,000

(1) Area retained makes allowance of 3,900 sq. ft. for expansion of Bacteriology Laboratories. (2) Area in brackets are subdivisions of areas listed above them. (3) Present area occupied by University Press 12,430 sq. ft. and by Illini Press 1,240 sq. ft. (4) Area retained includes Illini Hall remodeled and excludes Davenport House.



EXISTING CAMPUS BUILDINGS – 1944

POST WAR BUILDING PROGRAM



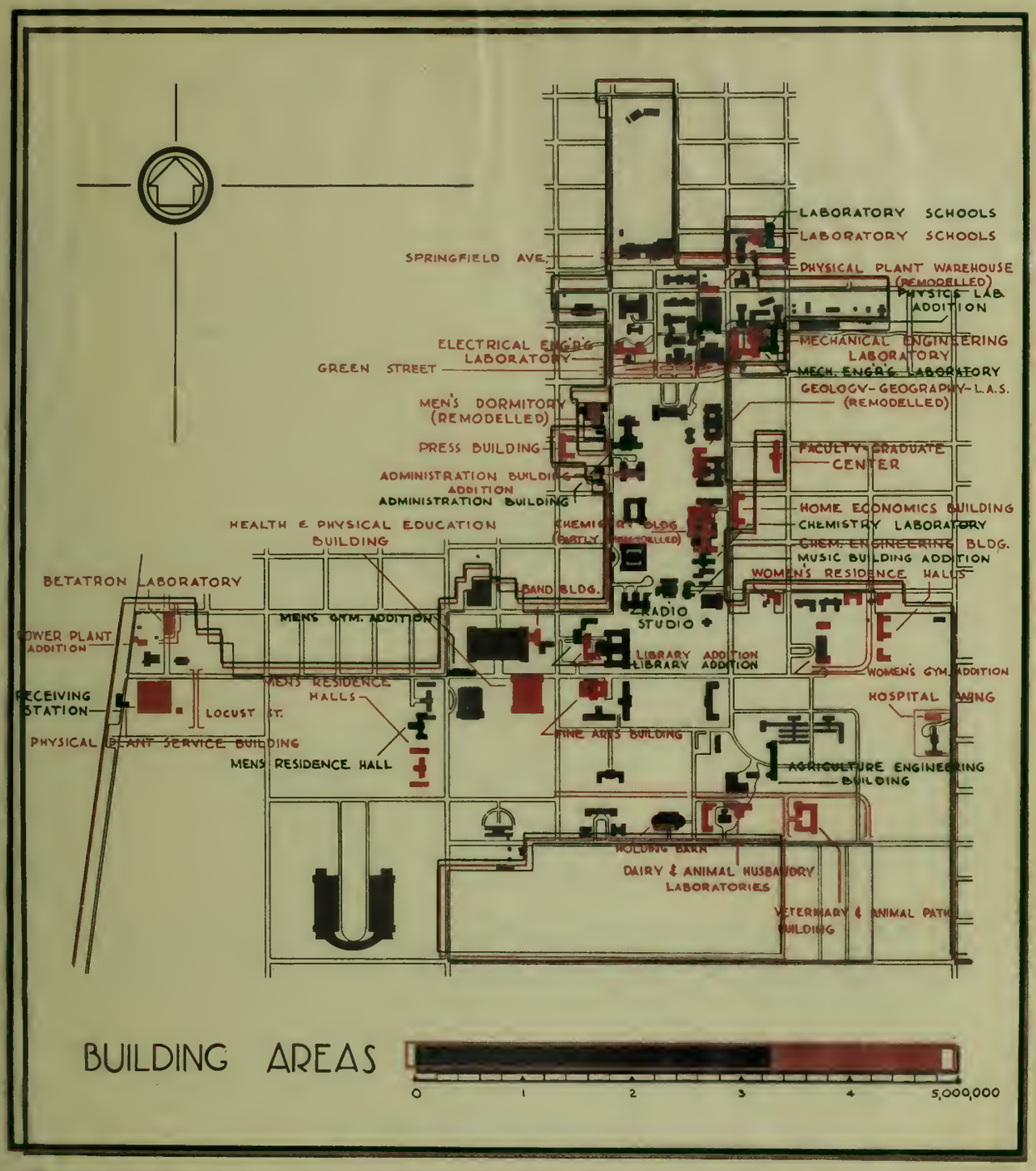
EXISTING CAMPUS BUILDINGS – 1944

PREFERABLE BUILDING CONSTRUCTION

DESIRABLE BUILDING CONSTRUCTION

DEFERABLE BUILDING CONSTRUCTION

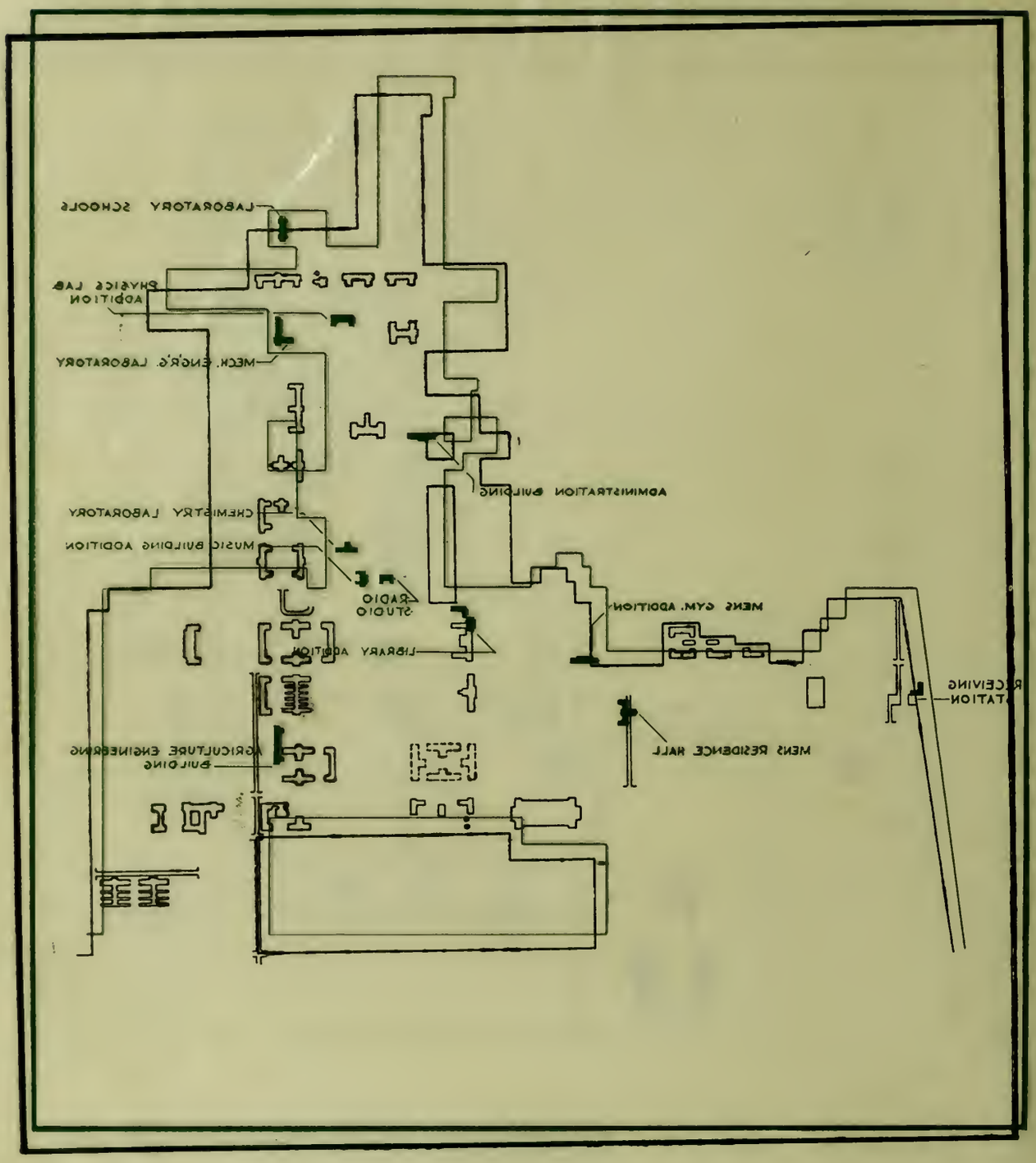
DEFERRABLE BUILDING CONSTRUCTION



EXISTING CAMPUS BUILDINGS – 1944

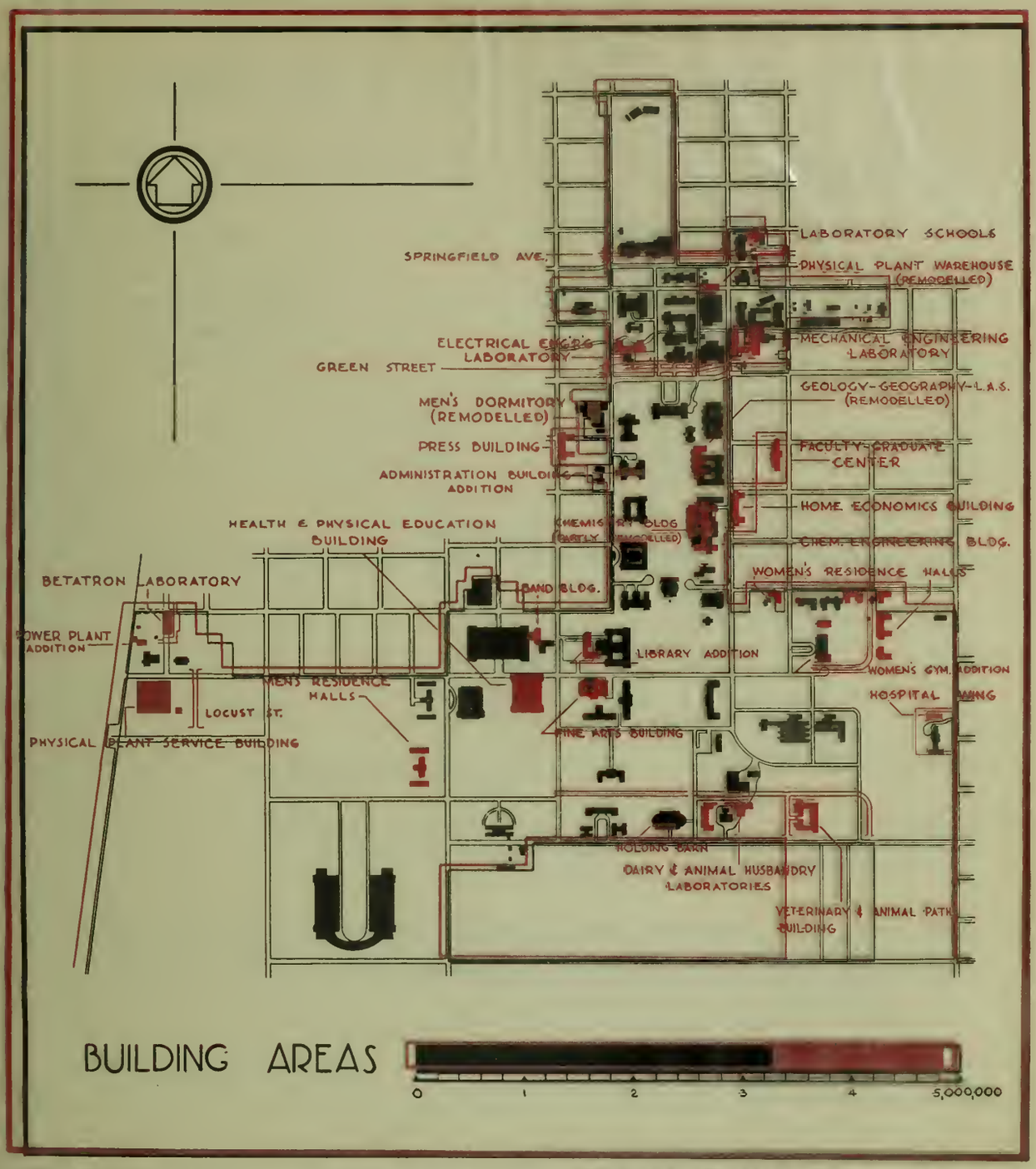
PREFERABLE BUILDING CONSTRUCTION

DESIRABLE BUILDING CONSTRUCTION



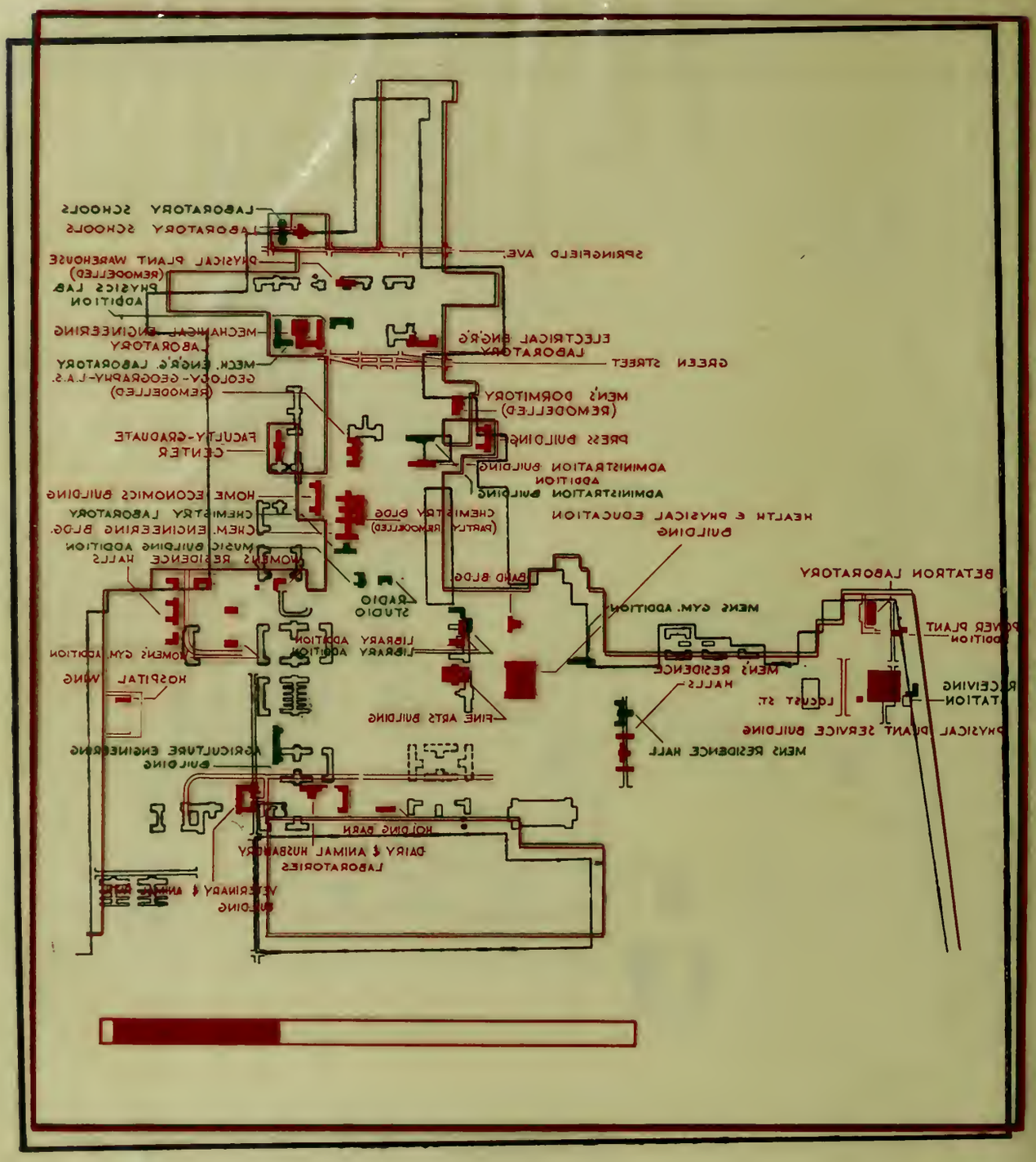
DESIRABLE BUILDING CONSTRUCTION

DESIRABLE BUILDING CONSTRUCTION



EXISTING CAMPUS BUILDINGS – 1944

PREFERABLE BUILDING CONSTRUCTION



PREFERABLE BUILDING CONSTRUCTION

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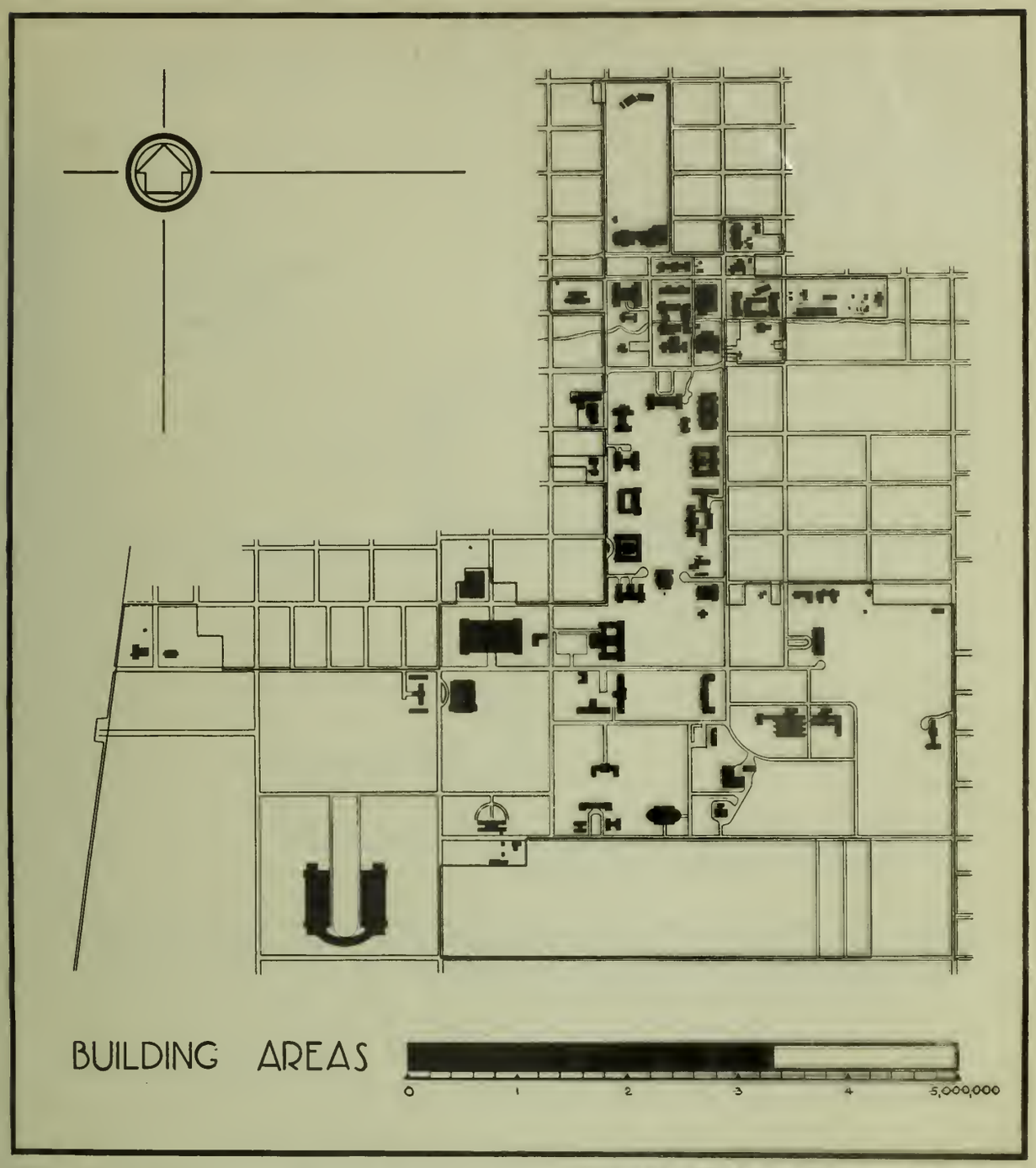

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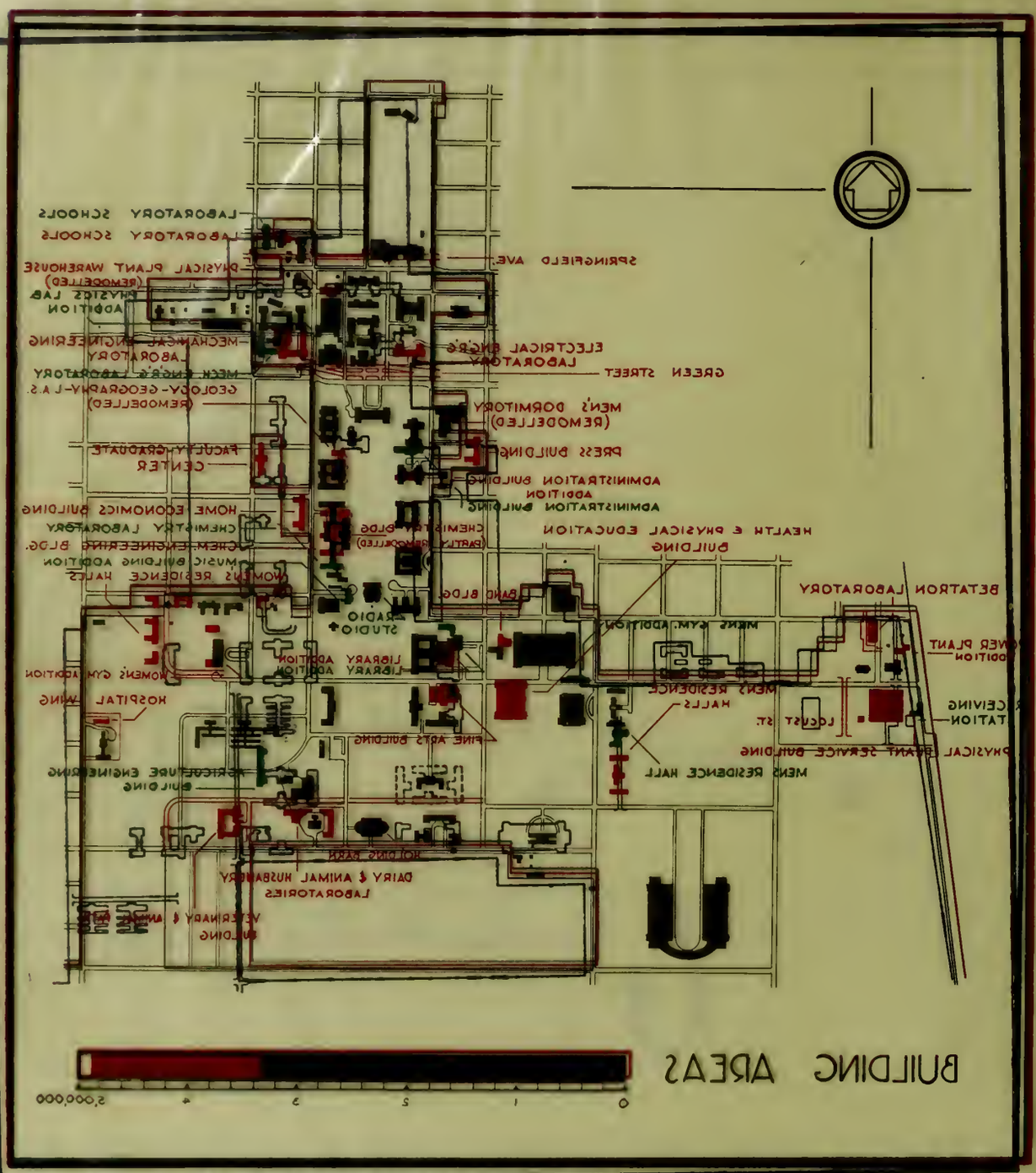
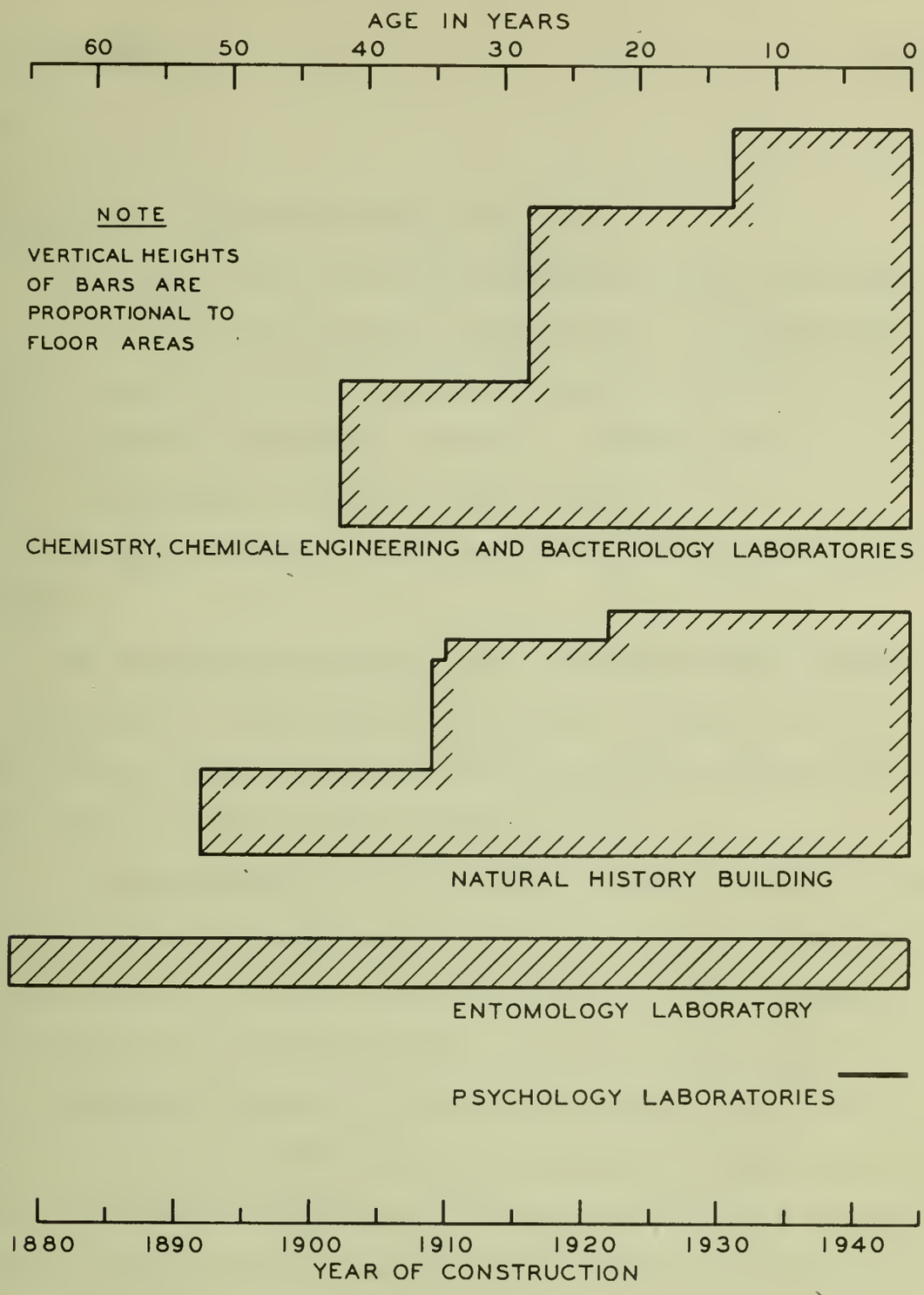


EXISTING CAMPUS BUILDINGS – 1944

PREFERABLE BUILDING CONSTRUCTION

DESIRABLE BUILDING CONSTRUCTION

DEFERABLE BUILDING CONSTRUCTION



AGES AND GROSS FLOOR AREAS OF LABORATORIES
COLLEGE OF LIBERAL ARTS AND SCIENCES

UNIVERSITY OF ILLINOIS
URBANA CAMPUS
1944

Name of Project: CHEMICAL ENGINEERING BUILDING

a. Cost: Building $500,000; Equipment $115,000; Total $615,000

b. Basic Reason for Need: Inadequate and in appropriate space to accommodate number of students who wish to register and to house the essential kinds of equipment. Fire hazard. See chart on preceding page.

c. Location: East side of Middle Campus.

d. Use: Primarily a laboratory building but will include classrooms and offices.

e. Description of Project: Kind - New construction, separate building. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame; reinforced concrete floor beams and slabs, slate roof, plain interior finish.

f. Justification: One of the major changes in research and instruction during the post-war period will occur in the field of Chemical Engineering. New apparatus and new processes have been developed at an extraordinary speed because of military and industrial needs. Up to the present time, the University has been compelled to restrict its work in this area to a small corner of Noyes Laboratory. The area is wholly inadequate, in space and equipment, to the teaching and research programs that should be developed. The demand for instruction in Chemical Engineering has far exceeded the facilities now available so it has been necessary to place restrictions on registration.

g. Relation to Other Projects: Independent of other projects but will contribute its share to the need for increased facilities at the Power Plant and extensions of distribution systems. The space vacated in Noyes Laboratory is to be remodeled as covered by another project. In order to use this space, it is essential that provision be made for remodeling.

h. Priority: Preferred.

i. Biennium: First

j. Operating Costs: $20,000 per year for operation and maintenance. Increase in staff will depend on registration and not on new space.

Name of Project: CHEMISTRY LABORATORY

a. Cost: Building $1,000,000; Equipment $100,000; Total $1,100,000.

b. Basic Reason for Need: Inadequate and inappropriate space to accommodate number of students who wish to register. Inadequate ventilation in present building and fire hazard in west section of present building.

c. Location: East side of Middle Campus.

d. Use: Primarily a laboratory building but will contain some classrooms and offices.

e. Description of Project: Kind - New construction as a unit of a building which it is expected will be required at some time in the future. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame; reinforced concrete floor beams and slabs, slate roof, plain interior finish.

Particular attention is to be paid to providing adequate ventilation. Coldrooms, constant temperature rooms and air-conditioned rooms for experimental research are proposed.

f. Justification: The Department of Chemistry at the University of Illinois is one of the most distinguished departments in the country. The field of chemistry will continue to play a major role in the post-war economy. The distinction of the department and the tremendous influence of its graduates have been achieved in a building and with equipment that have become increasingly inadequate and dangerous. The east section of Noyes Laboratory, built in 1915, is relatively modern and will continue to be used by the Chemistry Department, but even in this section major changes must be made. The west section, erected in 1902, has long been known as a fire hazard. Even with the construction of the Chemistry Annex in 1931 for introductory work, the building has been

overcrowded and the facilities for research seriously limited. The complete modernization of the east section of Noyes Laboratories for the use of the Chemistry Department is proposed. The cost of reconstructing the west section so that it could continue in use for Chemistry would be excessive and the result would be unsatisfactory for this use. The present proposal is to remodel and modernize the west section for classrooms and offices for departments in the College of Liberal Arts and Sciences and to build a new unit for Chemistry to take the place of the space vacated by that department. The construction of the new unit is covered by this project. The remodeling of the west section is another project. Chart following page 37 shows age of present laboratories.

g. Relation to Other Projects: Will occupy ground space now occupied by wing of the Old Agriculture Building, constructed in 1900, which houses the Animal Husbandry and Dairy Husbandry Laboratories. It will, therefore, be necessary to provide for the new Animal Husbandry Laboratories at the new Dairy Husbandry Laboratories before this project can be started. These are covered by other projects. Also, before the space vacated in Noyes Laboratories can be used for other purposes, it will be necessary to remodel that space as proposed in another project.

This project will contribute its share to the need for additional capacity in the Power Plant and extension of the distribution systems.

h. Priority: Preferred.

i. Biennium: First, if possible to make provisions for Animal and Dairy Husbandry Laboratories, with which it conflicts.

j. Operating Costs: $40,000 per year for operating and maintenance. Increase in staff will depend upon registration and not on new building space.

Name of Project: NOYES LABORATORIES REMODELING

a. Cost: Remodeling $549,000.

b. Basic Reason for Need: These laboratories are made up of a west section, constructed in 1902 of faulty slow-burning construction and, an east section, of about equal size, constructed of fireproof construction in 1915. The west section involves a fire hazard, when used for chemistry with its many open flames, but can be made entirely satisfactory as a recitation and classroom building to provide for expansion of congested departments in the College of Liberal Arts and Sciences. The plumbing of the laboratory tables is obsolete and in bad condition. The ventilating system is inoperative. This causes objectionable and dangerous conditions because of the fumes involved in chemical experiments and research.

The east section is fireproof. By installing an adequate ventilating system and modernizing in other respects, this section can be made suitable for continued use by the Chemistry Department.

The Bacteriology Laboratories occupy a small amount of space in the east section. It is proposed to assign more space to these laboratories.

c. Location: East side of Middle Campus.

d. Use: East section to continue in use as Chemistry Laboratories. West section to be used for classrooms and offices.

e. Description of Project: No basic changes are planned in the structure of the building but it is planned to modernize the east section and remodel and modernize the west section. The ceiling of the fourth story is of light wood construction. It is planned to replace this with fire resistant construction. The open wood stairways are to be replaced by closed fireproof stairways. Metal

lath and plaster ceilings will be provided throughout the west section. All walls will be plastered. New floor surfaces will be installed throughout.

f. Justification: The justification of this project depends upon the justification of the construction of new space for chemistry and upon the need for more classroom space in the College of Liberal Arts and Sciences to provide for the expected increase in enrollment. It is more desirable and probably cheaper to construct new laboratory space and remodel the vacated space for classrooms, to take care of increased enrollments, than it is to attempt to modernize laboratories and build new classroom space to provide for the increased enrollment. This building is ideally located for classrooms for Liberal Arts and Sciences because it is located in the heart of the middle campus where the activities of that college are conducted.

g. Relation to Other Projects: Can only be carried out after new space for Chemistry and Chemical Engineering has been provided.

h. Priority: Preferred.

i. Biennium: Second

j. Operating Costs: No increase for operation and maintenance. Increase in staff will depend upon registration and not on new building space.

Name of Project: HOME ECONOMICS BUILDING

a. Cost: Building $700,000; Equipment $75,000; Land $69,000, and Total $,884,000.

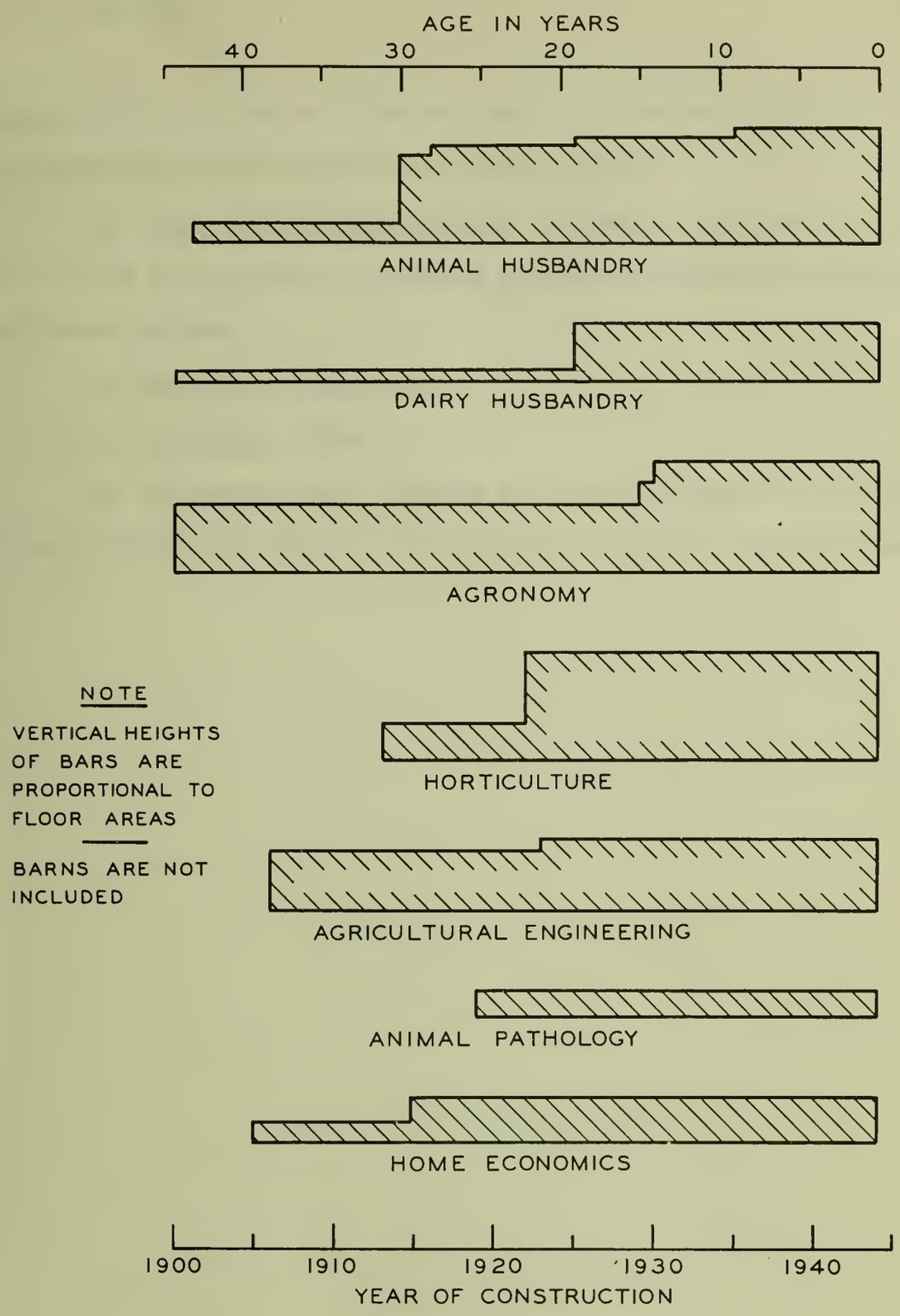
b. Basic Reason for Need: Present quarters too small, not designed for this use, and obsolete. Much of space is in unsuitable attic rooms with small dormer windows and no insulation. This is a rapidly growing department.

c. Location: East side of Middle Campus.

d. Use: Laboratory and classroom building.

e. Description of Project: Kind - new construction, separate building. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame, reinforced concrete floor beams and slabs, slate roof, plain interior finish.

f. Justification: The home economics curriculum is planned to offer students a home-centered liberal education. The Department of Home Economics, therefore, renders to the oldest of all institutions -- the home -- the same kind of service as is rendered to the school, the church, the government, and to many forms of business. These other institutions demand technically trained personnel but the home alone carries on much of its activity without such training. If home standards are to be raised, the University must strengthen its work in food and nutrition, in the practical care of the infant and the child, in family relations, household managements and kindred fields. A large share of instruction and research in home economics requires laboratory space. But classrooms, both large and small, are also needed. Storage space for large amounts of illustrative material is imperative. For each of these needs, the present quarters are inadequate. Because of rapidly growing interest in the home



NOTE

VERTICAL HEIGHTS OF BARS ARE PROPORTIONAL TO FLOOR AREAS

BARNS ARE NOT INCLUDED

AGES AND GROSS FLOOR AREAS OF LABORATORIES COLLEGE OF AGRICULTURE

UNIVERSITY OF ILLINOIS
URBANA CAMPUS
1944

economics field, the present quarters, devised for quite a different purpose, are crowded and poorly adapted to new developments.

g. Relation to Other Projects: Independent of other projects but adds its part to the need for increased power plant capacity and extension of distribution systems.

h. Priority: Preferred.

i. Biennium: First

j. Operating Costs: $28,000 per year for operation and maintenance. Increase in staff will depend upon registration and not on new building space.

Name of Project: ANIMAL HUSBANDRY LABORATORIES

a. Cost: Building $380,000; Equipment $55,000; Total $435,000.

b. Basic Reason for Need: Inadequate space and obsolescence of facilities and construction of present quarters in the Old Agriculture Building, constructed in 1900. Inadequate refrigerating space and air-conditioned rooms for experimental animals. For age of present laboratories see chart following page 44.

c. Location: South Campus.

d. Use: Primarily a laboratory building for Animal Nutrition and Meats Laboratories. Includes an adjacent holding barn and a machinery shed.

e. Description of Project: Kind - New construction, separate building. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame, reinforced concrete floor beams and slabs, slate roof, plain interior finish. Holding barn and machinery shed to be of simple but permanent construction.

f. Justification: The work of the Department of Animal Husbandry, both in teaching and research, suffers seriously because present facilities do not permit integrating the work of the Nutrition and the Meats Divisions with the work of the other divisions of the College of Agriculture. Nutrition and Meats are fundamental to the work with all classes of farm animals, yet because of lack of adequate facilities suitably located, advantage cannot be taken of this relationship, particularly as it relates to the instruction program, although the handicap to research is hardly less serious.

g. Relation of Other Projects: Present laboratory blocks construction of new Chemistry Laboratory. Contributes its part to need for increased capacity in Power Plant and extension of distribution systems.

h. Priority: Preferred.

i. Biennium: First

j. Operating Cost: $15,000 per year for operation and maintenance. Increase in staff will depend upon registration and not on new building space.

Name of Project: DAIRY HUSBANDRY LABORATORIES

a. Cost: Building $250,000; Equipment $25,000; Total $275,000.

b. Basic Reason for Need: Inadequate space and obsolescence of facilities and construction of present quarters in Old Agriculture Building constructed in 1900. For age of present laboratories see chart following page 44.

c. Location: South campus adjacent to Dairy Manufacturers Building.

d. Use: Primarily a laboratory building for Dairy Chemistry and Bacteriology. Includes an addition to Dairy Pure Bred Barn.

e. Description of Project: Kind - New construction, separate building. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame, reinforced concrete floor beams and slabs, slate roof, plain interior finish. Barn addition to be of simpler but permanent construction.

f. Justification: Illinois is a leading state in the production, processing and consumption of dairy products and the scale of these activities is steadily increasing with no prospect of saturation. The extremely perishable nature of milk and other dairy products calls for the closest and most sanitary control from the moment of production and the possibility of disease transmission as well as the dependence of production of healthy animals really extends the necessity for control to the herd from which the milk is drawn. These facts together with the numerous products and processes involved in dairy manufactures demand a large amount of laboratory training and research facilities. The University of Illinois has a good record of accomplishment in dairy research and teaching but its facilities are very inadequate as related to the present, to say nothing of the increasing need. The provision of adequate laboratory facilities

for dairy research and teaching is clearly in the interest of all citizens of the state in their capacities as consumers of dairy products while the large number of producers and workers in the dairy industries will be especially served by these facilities.

g. Relation to Other Projects: Present quarters block the construction of proposed Chemistry Laboratories. Contributes its part to the need for increased capacity in Power Plant and extension of distribution systems. This project can be incorporated with the Veterinary College building project.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Costs: $10,000 per year for operation and maintenance. Increase in staff will depend upon registration and not on new building space.

Name of Project: VETERINARY COLLEGE BUILDING

a. Cost: Tentative estimate of total cost $1,500,000.

b. Basic Reason for Need: To provide quarters for a College which has just become established and cannot be housed even temporarily in any existing building.

c. Location: On South campus.

d. Use: Laboratories and classrooms.

e. Description of Project: Kind - New building or buildings. Construction - Brick exterior bearing walls, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof, highly finished interior.

f. Justification: There is a lack of capacity for professional veterinary education in the United States, particularly in the Central States, a fact attested by University committees that studied the problem in 1921 and again in 1938. Young men, citizens of Illinois, cannot at present secure veterinary training in existing institutions because the veterinary schools are generally over-crowded and give preference to citizens of the states in which they are located.

Illinois is one of the leading states in production of livestock and livestock products. In addition, it ranks very high in those industries which assemble and process meats (occupying first place in meat packing), dairy products, and poultry products. These industries need men with veterinary training to protect against transfer of animal diseases to consumers of animal products.

Present facilities of the University, in this area of service, are limited to a Department of Animal Pathology and Hygiene in the College of Agriculture and the laboratory facilities are located in a building originally built as a beef cattle barn. The building cannot be made safe for the handling of animal diseases, many of which can be transferred from animals to man. In addition to its lack of sanitary provisions and laboratory facilities, the present building is wholly inadequate as to size if professional veterinary training is to be offered.

g. Relation to Other Projects: None, except that it will contribute its share to the need for increased capacity in the Power Plant and for extending the distribution systems.

h. Priority: Preferred.

i. Biennium: First stage in Second Biennium; Second stage in the Third Biennium.

j. Operating Cost: $60,000 per year for ordinary operation and maintenance costs plus a considerable cost for services due to the special character of project. No estimates are available for the latter costs.

Name of Project: ELECTRICAL ENGINEERING BUILDING

a. Cost: Building $750,000; Equipment $125,000; Total $875,000.

b. Basic Reason for Need: Extreme obsolescence of quarters, most of which are over 40 years old. Inadequate and poorly adapted floor space of improper construction. Practically the entire electrical industry has developed since the present quarters were constructed. Will continue to use most of present space. For age of present laboratories see chart on following pages.

c. Location: North campus at corner of Wright and Green Streets on site of present Health Service Station.

d. Use: Primarily a laboratory building but with special classrooms fitted up especially for demonstration.

e. Description of Project: Kind - New construction, separate building. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame, reinforced concrete floor beams and slabs, slate roof, plain interior finish.

f. Justification: It is evident that sweeping changes are taking place in the design of electrical equipment due to the demand for minimum weight and operation under unusual conditions. Also many new devices have been and are being developed as a war necessity. The fields of electronics, radar, ultra high frequencies, instrumentation, servomechanisms, and airplane applications are growing very rapidly. It is highly desirable that the students of the post-war period have the opportunity of studying and experimenting with the apparatus in these new fields. The present laboratories are now so crowded that there is no room for the new equipment without disposing of some of the present standard equipment. This might be a solution if the new equipment were to completely re-

place the old, but because it is not an improvement of the old but rather an application of electricity to new fields, the need for instruction in the present fields will continue. Further, because of the type of construction in the present buildings as well as the crowded condition, there is little, if any, flexibility in the present laboratories to meet the changes that will undoubtedly have to be met in the next quarter century.

To meet the demands already made upon the laboratories the machines are crowded more closely together than is usual in many industrial plants where tests are made by experienced employees. Requiring inexperienced students to work under these conditions has introduced a hazard greater than is met in industry and although no serious accident has occurred so far, the threat of one is very real. For the new fields of research and instruction, no adequate provision for laboratory instruction could have been made, nor can adequate provision be made now in the present building. If the Electrical Engineering Department is to keep its instruction abreast of the new developments and the standards set by other universities, additional fadilities designed specifically for electrical engineering purposes must be provided.

g. Relation to Other Projects: To be located on site of present Health Service Station. It will be necessary to provide new quarters for this Station before this building can be built. Since the Station is a relatively small unit, it is expected that new quarters can be provided during the first year of the first biennium. This building will make unusually high demands on the Power Plant for electrical energy and on electrical distribution system.

h. Priority: Preferred

i. Biennium: First

j. Operating Costs: $30,000 per year for operation and maintenance not including teaching and research staff, which is not affected by new building.

Name of Project: MECHANICAL ENGINEERING BUILDING

a. Cost: Building $1,000,000; Equipment $ 175,000; Land $58,000; and Total $1,233,000.

b. Basic Reason for Need: Obsolescence of present space and equipment and inadequate space for students who have increased markedly in numbers.

c. Location: On North campus at corner of Green and Mathews.

d. Use: Primarily a laboratory building but with classrooms where demonstrations may be made.

e. Description of Project: Kind - New construction, separate building. Construction - Brick exterior bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame, reinforced concrete floor beams and slabs, slate roof, plain interior finish.

f. Justification: Rapid progress is being made in all fields of mechanical engineering and the Department must keep up with such progress. A large proportion of the graduates from the Department now enter, and will continue to enter, the field of design and production. New courses will be offered so that students may receive instruction in the fundamentals of the newer manufacturing processes, such as die casting, plastic molding, powder metallurgy, and welding. Such courses call for more space to adequately house the required facilities. For age of present laboratories, see chart following page 50.

Research has always been given an important place in the work of the Department. During the past twelve years research projects were largely confined to heating, ventilation, and air conditioning. Space should be provided for carrying on research in many fields of mechanical engineering.

The aviation program of the University will require the Department to materially add to the internal combustion engine testing laboratory, as well as

provide space for small wind tunnels and research work in fuels, carburetion, instrumentation, and air conditioning.

g. Relation to Other Projects: Independent of other projects but present laboratory will be vacated or be remodeled for the Aeronautical Engineering Laboratory. This building will make unusually high demands on the Power Plant for electrical energy and on electrical distribution system.

h. Priority: Preferred

i. Biennium: First

j. Operating Costs: $40,000 per year for operation and maintenance not including teaching and research staff, which is not affected by the new building.

Name of Project: BETATRON LABORATORY

a. Cost: Building $200,000; Equipment $1,500,000; Total $1,700,000.

b. Basic Reason for Need: To provide facilities for utilizing the betatron, developed by Dr. Kerst, of the Department of Physics, for investigating the high energy phenomena and molecular physics; the strong possibility that a superior device is available for treatment of deep-seated cancer; and the numerous industrial possibilities such revealing hidden structural defects in machines and the quality of welds.

c. Location: South campus near Power Plant.

d. Use: Primarily a research laboratory.

e. Description of Project: The basic feature of the project is a large betatron with 250 million electron volt capacity which is estimated to cost $1,300,000. The building to house the machine is estimated to cost $200,000 and will be of fireproof construction.

f. Justification: The invention of the Betatron is one of the great achievements in the history of Physics. The proper development of this instrument and the exploration of the powers of a larger instrument make a special building absolutely essential. The new laboratory will be primarily a research laboratory but nonetheless a place for the intensive education of advanced students. In the training of graduate students, equal emphasis is placed on thorough training in course work and upon directed research. In the latter, every effort is made to give the student the benefit of accumulated experience and knowledge and to develop his powers for independent and responsible investigation.

g. Relation to other Projects: To supply power for this machine it will be necessary to increase the generating capacity at the Power Plant at a cost of $200,000.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Budget: The cost of operation will be high because of the high power consumption and the increase in staff which will be required. No definite estimate can be made. The cost will vary almost directly with the extent to which the betatron is used.

SUPPLEMENT TO PROSPECTUS

PROJECT NO. 10. BETATRON LABORATORY

In order to reduce the total cost of the projects proposed for the first post-war biennium, the 250-million electron volt betatron has been eliminated. The estimated cost of this project was $1,700,000.

Under this project number it is now proposed to build a Physics Research Building in which the present 30-million electron volt betatron can be housed and which will provide space for other projects in physics and possibly the larger betatron if funds can be found for its construction.

The present small betatron is now located in the Power Plant in the space provided for a generator which had to be eliminated to reduce the original cost of this building. The first step in increasing the electrical capacity of the Power Plant will be to install this generator. It is, therefore, necessary to provide other space for the present small generator so that this extremely important research project can continue.

September 23, 1944

Name of Project: AERONAUTICAL ENGINEERING LABORATORY

a. Cost: Remodeling $135,000; Equipment $75,000; Total $210,000.

b. Basic Reason for Need: A new program of Aeronautical Engineering has been established and has started to enroll students. The registration in this field is certain to be large. This project provides quarters for the new department.

c. Location: North campus

d. Use: Primarily laboratories but some classrooms and design rooms.

e. Description: Remodeling of building which it is proposed that Mechanical Engineering will vacate. The basic materials will remain unchanged. The building is fireproof construction with brick bearing walls, a structural steel frame and reinforced concrete floor slabs.

f. Justification: The marked development in the field of aeronautics which has been greatly accelerated by the war will result in an increased demand for training in aeronautical engineering. In a short time this curriculum will probably be the largest in the College of Engineering.

g. Relation to Other Projects: This project cannot go ahead until after the proposed Mechanical Engineering Building is completed.

h. Priority: Preferred

i. Biennium: Second

j. Operating Cost: No increase for operation and maintenance. There will be a considerable cost for the increase in staff resulting from the new department but this cost is independent of this project.

Name of Project: FINE ARTS BUILDING

a. Cost: Building $700,000; Equipment $40,000; Total $740,000.

b. Basic Reason for Need: The College of Fine and Applied Arts was established in 1931 and includes the Department of Art, Architecture, Landscape Architecture, and the School of Music. Previous to that date the Department of Art was in the College of Liberal Arts and Sciences and work in that department did not lead to a degree in that field. The registration was very small. Since the organization of the new college and the inauguration of the degree of Bachelor of Fine Arts, the full-time registration in Art has quadrupled. The funds provided by the State for buildings have been very restricted since 1931. There has, therefore, been no opportunity to properly house the Department of Art. It is scattered in six widely separated buildings in inadequate space not designed to suit its specialized needs. No space is provided for the display and educational use of art collections valued at over one-half million dollars.

c. Location: On the south campus, north of Architecture Building to which it is to be connected so that the two can function as a unit.

d. Use: Studios, exhibit space, lecture and classrooms, library and offices.

e. Description of Project: Kind - new construction. Construction - brick exterior bearing walls with hollow brick or tile backing, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs; slate roof and well finished interior.

f. Justification: The proposed Fine Arts Building is designed to house the rapidly growing Department of Art now scattered in six campus

buildings including a considerable amount of attic and basement space. It is to make available to students our several educationally valuable art collections, now stored because of lack of space in which to display them, to make possible the expansion of the cultural program of the College in the appreciation and history of the arts, to bring into closer association our instruction in all the graphic arts: Architecture, Landscape Architecture and our various options in Art, and to supply more ample quarters for our growing Ricker Library of Art and Architecture with which the Library of Landscape Architecture will be merged.

g. Relation to other Projects: This is an independent project on which work can proceed without interfering with other projects. It is to adjoin the Architecture Building. It will contribute its share to the need for increased capacity at the Power Plant and for extending the distribution systems.

h. Priority: Preferred

i. Biennium: First

j. Operating Cost: $28,000 per year for operation and maintenance. Staff increases depend on enrollment and not on new space.

Name of Project: LABORATORY SCHOOLS BUILDING

a. Cost: Building $700,000; Equipment $75,000; Land $16,000; and Total $791,000.

b. Basic Reason for Need: To supplement University High School as a facility for studying many phases of child growth and development. This is one of three proposed units which are planned to cover the entire period from the age of two through the high school. This unit will include the kindergarden and elementary school.

c. Location: On North Campus, adjoining the outside of the present University High School on Mathews and Springfield Avenues.

d. Use: To include specially designed classrooms for observing students without their being aware that they are being observed.

e. Description of Project: Kind - new building. Construction - Stone exterior bearing walls with hollow brick or tile backing, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof and well finished interior.

f. Justification: The unsolved problems of child development make it desirable to provide a child laboratory in which the development of the same children between the ages of approximately two and eighteen may be continuously studied and in which all interested departments of the University, such as Home Economics, Education, Biology, Psychology, Physical Education, and any engineering may study the problems of developing children and youth. In no American university are both of these essential conditions now being met.

This research objective of the Laboratory School is the basis for a teaching program. The college education of teachers and others planning to work with children may be made much more effective if opportunities are

provided for directed observation of children in many situations. The proposed building will provide adequate observation facilities designed so that those observing will not interfere with the research program or with the normal activities of the children.

Direct service to parents, to public schools, and to institutions working in the field of child development will be encouraged through the provision of a laboratory school in which research in progress and the results of research may be observed by those working with children throughout Illinois.

g. Relation to other Projects: Construction can proceed without interferring with any other present or proposed project.

h. Priority: Preferred

i. Biennium: Third

j. Operating Cost: $28,000 per year for operation and maintenance. There will be a substantial increase in the staff budget because of the expansion of its program.

Name of Project: ADDITIONS TO WOMAN'S GYMNASIUM

a. Cost: Building $165,000; Equipment $10,000; Total $175,000.

b. Basic Reason for Need: Present structure is main part of an uncompleted building. Proposed additions are wings which were included in original plan but not constructed due to inadequate funds. Increasing enrollment accentuates the unsatisfactory conditions resulting from the failure to complete the entire building as planned.

c. Location: East side of South campus.

d. Use: Gymnasiums, swimming pool, and game rooms.

e. Description: Kind - Two wings added to present building. Construction - Brick bearing walls, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof and plain interior finish.

f. Justification: The Woman's Gymnasium has never been completed. A north wing was intended to include game rooms, a gymnasium for corrective work and general offices. The south wing was intended to house a swimming pool. Space which was designed as a locker-shower-dressing room has been given over to a games room. Other activities are housed in the Woman's Building. Obviously, these are not conditions which satisfy the health and physical education programs of a large university. As is universally recognized, and especially because of war experience, health and recreational services play an important part in the total educational program both for men and women.

g. Relation to Other Projects: Construction can proceed at any time without interference. Will add its part to the need for increased capacity at the Power Plant and for extension of distribution systems.

h. Priority: Preferred.

i. Biennium: First

j. Operating Cost; $6,500 per year for operation and maintenance. No increase because of staff.

Name of Project: BAND BUILDING

a. Cost: Building $200,000; Equipment $20,000; Total $220,000.

b. Basic Reason for Project: Inadequacy, fire danger, and poor construction of present building which is a one-story frame structure built for temporary use during World War I. Funds were provided to construct this building just before the outbreak of World War II but they lapsed because priorities to proceed could not be obtained from the W.P.B.

c. Location: On South campus on same site as present building.

d. Uses: Auditorium, practice rooms, instrument rooms and locker rooms.

e. Description of Project: Kind - New building. Construction - Reinforced concrete and steel construction with brick exterior walls and a slate roof.

f. Justification: A new building for the University bands was included by the University Board of Trustees in the last biennial budget requests. The State Legislature concurred whole-heartedly by appropriating funds for the new building. Aside from a suitable suite of rooms for the famous Sousa Band Library, quarters for the valuable Carl Busch Museum collection of old instruments, and facilities for the annual band clinics, a new band building would serve as a center for an important phase of the artistic activities of both faculty and students. Even though a main purpose of the building is to provide rehearsal rooms for the University bands, it has long been recognized that concerts, individual training, and service at public functions are an integral part of the educational program of the University. About 350 students participate in the activities of the Bands each year. In this way, thousands of students,

who would not otherwise receive training in music, develop an appreciation of music which greatly enriches their lives.

g. Relation to Other Projects: The present building would have to be removed before the new building could be started. This would make it necessary to provide temporary quarters during the construction period. This project contributes its share to the need for increased capacity at the Power Plant and for the extension of distribution systems.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Cost: $8,000 per year for operation and maintenance. No increase in staff involved.

Name of Project: LIBRARY ADDITION

a. Cost: Building $685,000; Equipment $10,000; Total $695,000

b. Basic Reason for Need: Between 60 and 70 thousand books are added annually to the Library. Stacks must be provided to receive these books. The present capacity has reached its limit so new space must be provided. Each stack unit provides for 500,000 books. One such unit is proposed. Also, one wing is proposed for construction to provide for additional reading rooms, a map room and a rare book room in addition to other facilities.

c. Location: South campus.

d. Use: Book stack, reading room and service room.

e. Description of Project: Kind - Additions. Construction - Typical stack construction for stack unit. Brick exterior bearing walls, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof, and well finished interior for wing.

f. Justification: An enormous expansion in college and university libraries has taken place in recent years. Among the reasons for the rapid growth is the enlargement of curricula, partly by the expansion of well established fields and partly by the development of entirely new teaching fields. The body of knowledge, with which college subjects deal, has become so vast and diversified that few subjects can now be treated satisfactorily with single textbooks; instead the use of many books in libraries is required. There has been increasing registration in the social sciences, a field which produces new material at a rapid rate and which is dependent upon access to a wide range of material. Survey courses have been introduced also as a basis for general education; these courses cannot be successfully taught with textbooks but require a wide

range of material. Finally, as indicated above, research has become a prime function of universities and the demands made by research on library resources are virtually limitless.

The University of Illinois Library is the largest American state university library, and one of the three or four largest of all university libraries in the United States. The Illinois book collection has doubled in size, on an average, every seven years for the past forty years. The Library now holds approximately 2,000,000 volumes. The use of the Library has kept pace with its physical growth. In the last normal year before American entrance into the war, i.e., 1940-41, the Library had a total circulation of 1,000,000 volumes, exclusive of reference service and use made by those having direct access to the book stacks.

The need for building additions is urgent if adequate library service is to be given after the war. In a number of ways the Library has outgrown its present quarters and provision should be made for several new activities. The rapid filling of space is a reflection of the active efforts made to build up the book collection and in general to develop here a great research library. A large increase in the University's enrollment following the war is certain. This fact, added to changes in methods of instruction, heavily emphasizing library research and study, will undoubtedly result in more intensive use of the library than ever before. Prior to the war the Library's reading room facilities were often filled to capacity and we should be prepared for even heavier demands in the post-war period.

g. Relation to Other Projects: Construction could proceed with very little interruption of activities in the present building. These additions would

contribute their share to the need for additional capacity in the Power Plant and for the extension of distribution systems.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Cost: $27,000 per year for operation and maintenance.

Name of Project: RESIDENCE HALLS

a. Cost: Building and Equipment $3,000,000. This fund would be used to finance a partially self-liquidating project costing between four and five million dollars. This includes the cost of modernizing Illini Hall.

b. Basic Reason for Need: The present housing facilities in Champaign and Urbana were inadequate for the pre-war enrollments and will be grossly inadequate to provide for the expected post-war enrollments. As may be seen from the chart on the following page, the University of Illinois has the smallest percentage of its students in dormitories of any Big Ten School. The highest percentage is at the University of Iowa where 31.3 per cent of the students are in University dormitories. The University of Illinois has the lowest with 7.2* per cent. This is in spite of the fact that the ratio of the enrollment to the town population is much higher than at any other Big Ten School. Sixty per cent or more of the enrollment at some Big Ten Schools live at home, while at the University of Illinois the ratio is about five per cent. Also, because the proportionate number of rooming houses and homes where students might live in Urbana and Champaign is much smaller than at any other Big Ten School. The other extreme exists at the University of Chicago and Northwestern University, both of which have about twice the percentage of students in University dormitories as the University of Illinois, in spite of the vastly greater population of the surrounding areas.

The present capacity of the Women's Residence Halls is 350, the Men's Residence Halls 370, and Illini Hall for men, 80, giving a total capacity of 800. If an enrollment of 12,290 were distributed in present housing facilities, the distribution would be as shown on the chart following page 78. It will be noted that 6,000 students would be in rooming houses.

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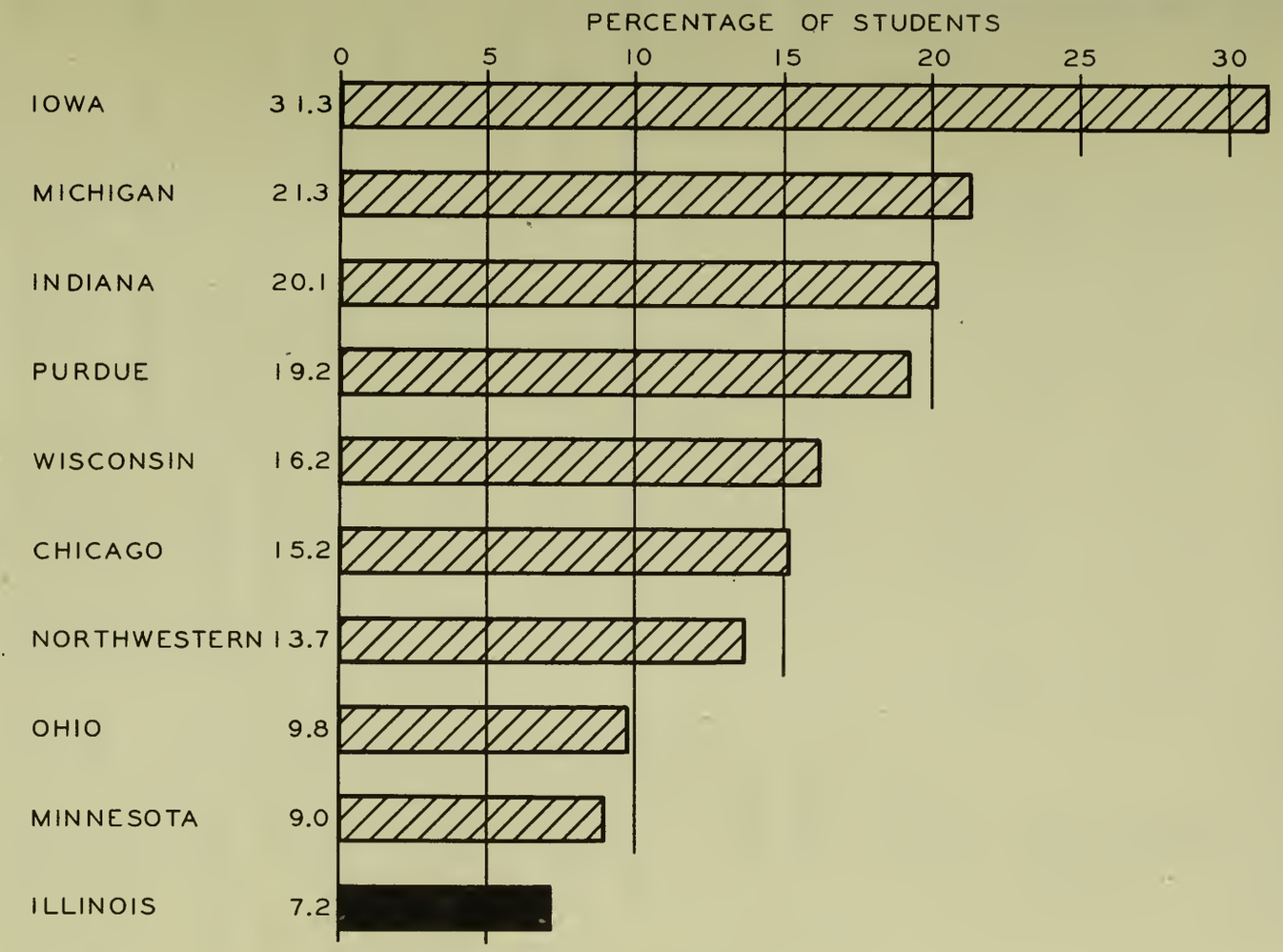
* Should be 800 ÷ 13,100 = 6.1 per cent



PERCENTAGE OF STUDENTS IN RESIDENCE HALLS IN 1940-41
AT THE BIG TEN UNIVERSITIES

UNIVERSITY OF ILLINOIS
URBANA CAMPUS
1944

DISTRIBUTION OF STUDENTS IN VARIOUS TYPES OF HOUSING
for an enrollment of 12,900

Types of Housing	No. of Students
Student rooming houses.....	6,000
Fraternities and sororities.....	2,750
University dormitories.....	800
Private dormitories.....	625
Living at home.....	624
Cooperative houses.....	425
Community.....	274
Married students in own homes, apartment dwellers, and working for rooms	802
Total.....	12,290

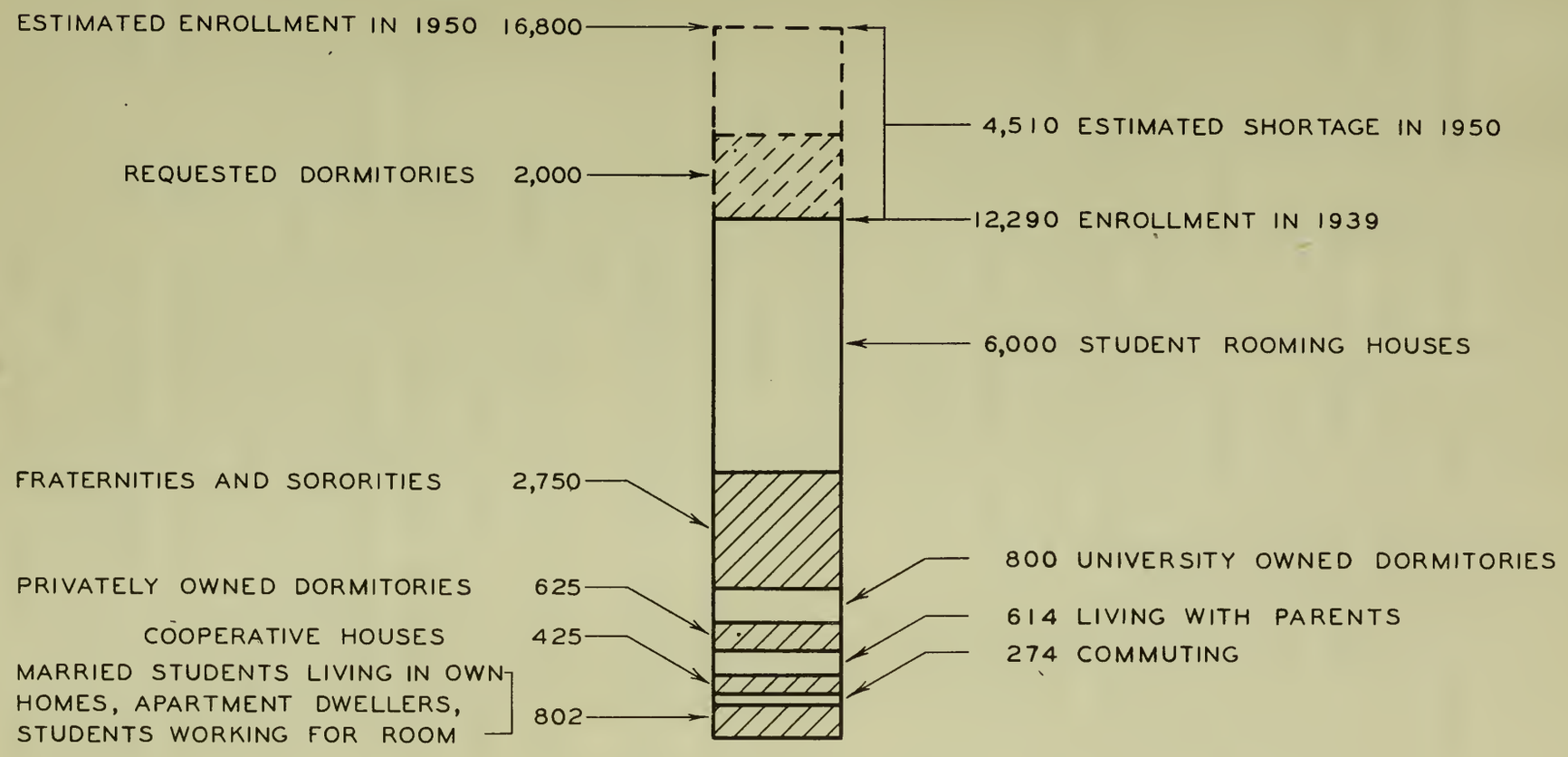
These data are shown graphically in the chart on the following page.

It seems clear that substantial increases in housing facilities can only come through increasing the University dormitories. No new fraternity or sorority houses can be expected, private capital will not build new rooming houses because such investments do not pay. The increases from other sources are certain to be small.

The construction of new dormitories will not cause hardships on pre-war rooming-house owners or operators because all suitable rooming houses will be fully utilized. Failure to provide adequate housing quarters to take care of prospective students will result in many going elsewhere. Under such conditions the towns of Urbana and Champaign would suffer and the University's usefulness would be improved.

A large number of the present rooming houses are from 25 to 50 years old, and some are in rather bad state of repair, have inadequate toilet facilities and are depreciating rapidly.

The only means of providing adequate housing for an increasing student body is through the construction of University dormitories. Those recommended



TYPES OF HOUSING
FOR 12,290 STUDENTS ENROLLED IN 1939
AND
ESTIMATED SHORTAGE OF HOUSING IN 1950

UNIVERSITY OF ILLINOIS
URBANA CAMPUS
1944

by the Committee would improve the situation but still greater provision should be made as soon as possible. For an enrollment of 16,800, it will be necessary to find quarters for 4,500 more students than the number given in the preceding table. Most of these will have to find rooms in rooming houses of poor quality or at excessive distances from the campus, if residence halls are not constructed. In fact, it seems quite likely that the enrollment at the University will be limited by the available rooming house capacity. It is quite probable that this effect has already been felt. New dormitories are an urgent need.

c. Location: Men's Residence Halls are proposed for the west side of the South campus and Women's Residence Halls for the east side of the South campus.

d. Use: For housing students.

e. Description of Project: Kind - New buildings. Construction - Brick exterior bearing walls with hollow brick or tile backing, reinforced concrete or structural steel frame, reinforced concrete floor beams and slabs, slate roofs, plain interior finish.

f. Justification: Contrary to general opinion, the residence halls in a college or university are not merely places where students may live. Through supervised study hours, tutorial plans and regulated social activities, residence for students becomes an integral part of the educational life of an institution. This is the main goal behind the proposal to increase the number of residence halls both for men and for women. It is estimated that, if enrollment increases as expected after the war, the community will be short on housing accommodations for well over two thousand students. The safest guarantee of adequate facilities for residence, for supervised study and for controlled social activity is construction under the auspices of the University.

g. Relation to Other Projects: Construction can proceed without reference to other projects. These buildings will contribute their share to the need for increased capacity in the Power Plant and the extension of the distribution systems.

h. Priority: Preferred.

i. Biennium: Half in First Biennium and half in the second Biennium.

j. Operating Cost: Paid out of income.

Name of Project: HEALTH SERVICE STATION

a. Cost: Building $220,000; Equipment $20,000; Total $240,000.

b. Basic Reason for Need: Present Health Service Station was built in 1896 to house the President of the University. It is frame construction with obsolete plumbing, lighting and heating and is entirely unsuited to its present use.

c. Location: On west side of Middle campus.

d. Use: Consultation rooms, waiting room, offices, and laboratories.

e. Description of Project: Kind - New building. Construction - Brick bearing walls with hollow brick or tile backing, structural steel or concrete frame, reinforced concrete floor beam and slabs, slate roof, well finished interior.

f. Justification: The Health Service is an extremely active organization responsible for the maintenance of a healthful environment on the campus including water supply, food inspection and living conditions. It is responsible for giving a health examination to all students who are entering the University for the first time; the prevention and control of communicable disease; the administration of first aid in case of accident or illness and the encouragement of students to acquire health habits. The proper functioning of the Health Service is essential if student health is to be maintained. Adequate quarters are an important requisite to proper functioning.

g. Relation to Other Projects: The Health Service Station now occupies the site assigned to the proposed Electrical Engineering Building so it is essential that new quarters be provided for the Health Service before work can start on the Electrical Engineering Building. It is expected that the delay

from this cause will not exceed one year and that work on the badly needed Electrical Engineering Building can be far advanced during the first biennium.

h. Priority: Preferred.

i. Biennium: First

j. Operating Cost: $8,000 per year for operation and maintenance. No increase in staff cost due to building.

Name of Project: UNIVERSITY PRESS BUILDING

a. Cost: Building $600,000; Equipment $75,000; Land $15,000; and Total $690,000.

b. Basic Reason for Need: Inadequacy and lack of suitability of present space for present program and the need for increasing the extent of this program.

c. Location: West side of Middle campus.

d. Use: Space should be provided for editing, manufacturing, storing, and distributing the publications of the University. Space should be available for mimeographing, addressing, photography and blueprinting.

e. Description of Project: Kind - New Building. Construction - Brick bearing walls with hollow brick or tile backing, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof, plain interior finish.

f. Justification: The University of Illinois Press, employing more than thirty persons, edits, manufactures, and publishes books and printed material used by the University equivalent to a commercial business of a quarter of a million dollars a year. This will increase as the University grows. The shop is located in a basement that is overcrowded as well as unsuited to the work. Modern printing processes require not only adequate space, but proper lighting and the control of such factors as temperature and humidity. The University Health Service and the Chief of the Division of Industrial Hygiene of the State Department of Public Health have recommended removal to more sanitary quarters. The offices and editorial rooms are crowded and poorly arranged, and are separated to an extent not conducive to the best work. A new building is needed to relieve such bad conditions and to provide for the economical and efficient centralization of all graphic arts processes and activities under one roof.

The scholarly and scientific publications, as well as the bulletins, circulars, catalogs, and other publications, should be collected from the basements and attics in several buildings where they are now stored so that they may be kept under proper conditions and distributed from a central mailing room. At present, the mailing is slow, inconvenient, and unnecessarily expensive. The Board of Trustees has recognized the importance of the printing and publication program of the University by appointing a special committee on the development of the Press and approving a report looking to a large expansion.

g. Relation to Other Projects: Independent excepting the demand it creates for increased capacity in the Power Plant and for extension of the distribution systems.

h. Priority: Preferred.

i. Biennium: Third

j. Operating Cost: $24,000 per year for operation and maintenance.

Name of Project: HOSPITAL ADDITION

a. Cost: Building $228,000; Equipment $50,000; Total $278,000.

b. Basic Reason for Need: Required membership in the Hospital Association and expected increase in enrollment will add considerably to the demands made on the University Hospital. The Hospital now has a total capacity of 112 beds which is quite small for the pre-war enrollment of 13,400 and will certainly be inadequate when the enrollment reaches sixteen or seventeen thousand.

c. Location: New wing on north side of McKinley Hospital on east side of South campus.

d. Use: Normal hospital use.

e. Description of Project: Kind - Addition. Construction - Brick exterior bearing walls, with structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof, highly finished interior.

f. Justification: Facilities must be available for all students who are ill, otherwise a catastrophe may result. The local hospitals will not take cases of communicable disease so the University must make adequate provisions for such cases as well as the many other forms of disease which may develop in its large student body.

g. Relation to Other Projects: This project is independent of other projects except the Power Plant which must provide heat and power.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Cost: $10,000 per year for operation and maintenance plus the cost of increased staff to care for the increased space.

Name of Project: ADMINISTRATION BUILDING ADDITION.

a. Cost: Building $430,000; Equipment $15,000; Total $445,000.

b. Basic Reason for Need: Shortage of space for the main administrative units.

c. Location: On south side of the Administration Building which is on the west side of the Middle campus.

d. Use: Principally office space.

e. Description of Project: Kind - Addition to a present building. Construction - Brick exterior bearing walls with hollow brick or tile backing, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof, well finished interior.

f. Justification: The general administrative offices on the Urbana campus are extremely crowded. In education as in industry, efficient administrative service requires a fairly close concentration of general offices, and speedy channels of communication from one office to another. A part of the space occupied by the general administrative officers was originally constructed as a classroom building. Partial modernization has been effected, but the entire administrative machinery of the University would work more smoothly if two new wings were added in order to complete the building as it was originally designed. One wing is being proposed in the present program. Offices that are now dispersed in many different buildings, some of which are scarcely worth modernizing, could then be assembled in one place for the convenience of both faculty and students.

g. Relation to Other Projects: Construction could proceed without interference with other projects. This addition would contribute its share to the need for increased capacity at the Power Plant.

h. Priority: Preferred.

i. Biennium: Third

j. Operation Cost: $17,000 per year for operation and maintenance.

Name of Project: FACULTY GRADUATE-STUDENT CENTER

a. Cost: Building $500,000; Equipment $30,000; Total $530,000.

b. Basic Reason for Need: To provide facilities for the recreational and social life of faculty members and graduate students and for housing younger members of the staff, graduate students, and guests of the University.

c. Location: On Middle campus.

d. Use: Lounge room, dining room, conference rooms, recreational space, and sleeping and study rooms.

e. Description of Project: Kind - New construction. Construction - Brick exterior bearing walls, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, slate roof and well finished interior.

f. Justification: Most first-class universities make provisions for the recreational and social life of the faculty as well as the students. The Union Building is serving the undergraduate students well but the activities and interests of graduate students and particularly of the faculty are quite different from those of the students. For many years the Men's Club and the Woman's Club made up largely of members of the staff have partially provided for these interests for those staff members who are also members of one of the clubs. Nothing is provided for other staff members and graduate students. The University has depended on these clubs to entertain its guests. The facilities are not at all in keeping with the functions they should perform. A Faculty Graduate-Student Center would contribute much to the facilities of the institution.

g. Relation to Other Projects: Construction could proceed on this project without interference with present or proposed buildings.

h. Priority: Preferred

i. Biennium: Second

j. Operation Cost: Would be largely provided for by income from club dues, assessments on the faculty, or other income.

Name of Project: ADDITIONAL CAPACITY AT ABBOTT POWER PLANT

a. Cost: Building $190,000; Equipment $460,000; Total $650,000.

b. Basic Reason for Need: Plant has inadequate capacity for present buildings. New buildings will require further increases in capacity.

c. Location: West side of South campus.

d. Use: To supply electrical energy for light and power on the campus and steam for heating buildings and other purposes.

e. Description of Project: Addition of present building and new electric and steam generating units. One 3,000 kw electric generator and one 80,000 lb. per hr. steam generator are proposed.

f. Justification: The Abbott Power Plant serving the Urbana campus is at present deficient in firm electrical generating capacity. The present power plant includes three 80,000 lbs. per hr. boilers with a firm capacity* of 160,000 lbs. per hr., and two 3,000 kw generators with a firm capacity of 3,000 kw. The peak steam load at the present time is 160,000 lbs. per hr. and the peak electric load is 3,700 kw.

Of the two electric generating units, one is a back pressure type machine and the second one is an automatic extraction condensing machine. The original plans for the Abbott Power Plant included three electric generating units; however, one was eliminated and only two installed because of lack of funds. During the spring and summer months it is only practical to run the condensing machine. Loads of 2,600 to 3,300 kw have already been carried during this period. If the present condensing machine were lost due to failure, the campus would be without power or light for demands in excess of 1,000 kw. The present school program of three semesters does not allow sufficient time between semesters to overhaul the generating units, thus necessitating a firm capacity for the entire year.

* Firm capacity is capacity with largest unit out of service for repairs.

This project contemplates the installation of one 3,000 kw. automatic extraction condensing turbine and one 80,000 lbs. per hr. steam generating unit with necessary auxiliaries, as an extension to the present plant to provide firm capacity for existing campus and to service additional buildings included in this program. The following is an analysis of comparative conditions for the present campus and the contemplated building additions:

	Present Campus	Projected
Cubage	70,000,000 cu. ft.	95,500,000 cu. ft.
Peak Steam Load	160,000 lbs. hr.	225,000 lbs. hr.
Energy Consumed	13,000,000 kw hrs.	30,000,000 kw hrs.
Peak Load	3,700 kw	8,500 kw

With the installation of the additional steam and electric generating units, the plant will have a firm capacity of 240,000 lbs. per hr. of steam and 9,000 kw of electrical energy.

An additional 3,000 kw automatic extraction condensing turbine will be required to meet the electric demand from the Betatron Laboratory, and the cost of this machine, including addition to the plant, is included as a part of the Betatron project.

g. Relation to Other Projects: Other building projects cannot proceed unless the Power Plant capacity is increased in proportion to their demands for electric energy and steam.

h. Priority: Preferred.

i. Biennium: First

j. Operating Cost: Included in the operating cost of buildings.

Name of Project: ADDITION TO DISTRIBUTION SYSTEMS

a. Cost: Construction $455,000; Equipment $590,000; Total $1,045,000.

b. Basic Reason for Need: To provide services for expected normal growth of campus utility demands and for new buildings in this program.

c. Location: Traverses nearly the entire campus.

d. Use: To convey the steam, gas, electricity, and air to various parts of the campus.

e. Description of Project: Extensions, additions and replacements of portions of the steam, air, electric and gas distribution systems.

f. Justification: In addition to certain alterations that must be made to present distribution systems to meet immediate demands, additions to, extensions of, and replacement of certain portions of the system must be made in order to provide services for expected normal growth of campus utility demands and for new buildings requested in this program.

The following is analysis of comparative conditions for the present campus and the contemplated building additions:

	Present Campus	
Cubage	70,000,000 cu. ft.	95,500,000 cu. ft.
Peak Steam Load	160,000 lbs. hr.	225,000 lbs. hr.
Energy Consumed	13,000,000 kw. hrs.	30,000,000 kw. hrs.
Peak Load	3,700 kw	8,500 kw

Steam and Air Distribution System —The original steam distribution system was designed for pressures of 125 lb. gage at saturated steam temperatures employing cast iron valves and fittings with provisions for expansion of pipes to meet those conditions. The new power plant was designed to meet modern turbo-generator design conditions for maximum pressures of 375 lb. gage at temperature of 750°F. The portion of the high pressure distribution system constructed at the same time as the new power plant was designed for the above pressures and tem-

peratures, and the same portion of the low pressure system was designed for pressures of 150 lb. gage at temperatures of 450°F. with corresponding superheat. The increased pressures and temperatures require (1) the replacement of all cast iron valves, fittings and trim, and (2) the redesign of expansion joints, anchor points, and pipe work to compensate for increased expansion of steam mains due to higher operating or super-heat temperatures.

At present, the major portion of the steam distribution system and pipe work north of the Auditorium passes through the basement of the buildings. This condition is extremely hazardous in the event of failure of cast iron trim. One such failure has already occurred in the basement of the Auditorium (fortunately when building was not occupied), filling the building with steam which could have no doubt resulted in serious loss of life had the failure occurred two hours later. Also demands have grown beyond the capacity of the steam mains in the present system, making it necessary to increase the size of the mains. In place of redesigning the distribution system to eliminate the hazards and to provide for increased capacities, it will be more economical to construct new tunnels along Wright Street and Mathews Avenue, closing the loop at Green Street.

Steam service to buildings inside and outside the loop will be supplied through buried conduit as the most economical type of service. This loop, together with the closing of the loop on south Sixth Street, east on South Drive and north along Mathews Avenue to Nevada Street, will also make it possible to supply steam to the new buildings included as a part of this program without additional steam mains being installed in the present tunnel from the Abbott Power Plant to the junction at the corner of Sixth Street and Gregory Drive. The closing of the south loop is necessary to supply steam to present buildings without new buildings being added, and the resulting reduction in back pressure on the turbines at the power plant will

result in a material saving in fuel consumption. The closing of this loop was included in the original program for the construction of the Abbott Power Plant, but was eliminated because of lack of funds.

An additional compressed air supply main from the Abbott Power Plant is required to even out variations in pressure on present system and to supply compressed air for servicing new buildings included in this program.

Electrical Distribution System--At the time the Abbott Power Plant was constructed the electric distribution system was designed to include nine 4,000 volt feeders to nine 1,000 kw capacity load centers, each load center supplying a group of adjacent buildings. A reserve electric feeder was designed and installed as the name implies, to serve any one of the main load center feeders in the event of failure of one of the feeders. Because of lack of funds at that time, it was necessary to eliminate three of the load centers and to use the reserve feeder to supply energy for the area north of Green Street, which is still being served by sub-feeders at 2,300 volts. With the contemplated expansion and resulting increase in electrical load to practically double its present figure, a few of the new buildings can be added to existing load centers, but it is imperative that in addition there be installed six new load centers. The new load centers and new main feeders and new sub-feeders are shown on the Prospectus and are summarized as follows:

(1) Four new load centers, one in the New Physical Plant Service Building, one in the Old Agronomy Building, and one in the new Chemical Engineering Building will supply new buildings in their vicinity.

(2) Two load centers north of Green Street are required to release the reserve feeder for its proper use and supply new and existing buildings in this section.

(3) A new load center is needed for the Betatron, Airport, Radio Transmitter, and future service to the South Farm area.

The above summarizes the necessary extensions of steam, air, and electrical distribution systems to provide safe operating margins for the present campus, contemplated expansion due to normal growth, and new buildings included in this program.

g. Relation to Other Projects: Essential to proposed projects and required for improvement of facilities in present buildings.

h. Priority: Preferred.

i. Biennium: Primarily in first biennium.

j. Operating Cost: Included in operating costs of buildings.

Name of Project: IMPROVEMENTS TO MEET CODE AND SAFETY REQUIREMENTS

a. Cost: Construction $133,000; Equipment $12,000; Total $145,000.

b. Basic Reason for Need: To reduce the danger of loss of life from fire, panic or other causes.

c. Location: Improvements are proposed for many buildings located on all parts of the campus.

d. Use: No comment.

e. Description of Project: Installation of emergency lighting in several auditoriums, enclosing the stairways in several buildings, installation of panic bolts on certain exterior doors and changing the swing of several exit doors.

f. Justification: The National Electric Code and the American Standards Association provisions for schools require continuous illumination and an independent source of power where the seating capacity exceeds 100 persons. The emergency lighting service, therefore, is proposed in the following buildings: Auditorium, Huff Gymnasium, Lincoln Hall Theatre, and Smith Memorial Hall. In order to provide a continuous source of lighting and power service for the Hospital at all times, an independent supply is proposed.

A program for the enclosure of stairs is proposed for the protection of occupants in buildings where (1) the fire hazard is relatively high, such as in Old Agriculture, Engineering Hall, Natural History, and Chemistry Annex, (2) where the exit facilities are substandard, such as Architecture, and Union Arcade, and (3) where the human occupancy is relatively large, such as Lincoln Hall. These improvements are all required to meet the standards of the National Board of Fire Underwriters and are the most urgent on the campus, as similar needs in fifteen other buildings have been deferred.

Panic hardware is requested for all exterior doors not now so equipped, and in addition, all exterior doors are to be changed so as to swing outward in the direction of travel. These improvements are solely designed to prevent the loss of life in the event of fire or panic and to meet the code requirements of the National Board of Fire Underwriters.

Window washing safety equipment is requested for thirteen buildings where the hazard is greatest and only for windows above the first floor. Similar needs, although less hazardous, exist in twenty-five other different buildings. All such buildings were constructed before such safety standards were a basic requirement for building construction of this height.

g. Relation to Other Projects: Affects many present buildings but none of the proposed buildings.

h. Priority: Preferred

i. Biennium: Distributed through the three bienniums.

j. Operating Cost: Included in other operating costs.

Name of Project: STATE DEPARTMENT OF PUBLIC HEALTH RECOMMENDATIONS

a. Cost: Construction $40,000; Equipment $20,000; Total $60,000.

b. Basic Reason for Need: Unhealthful conditions in swimming pools in three gymnasiums, the Skating Rink, and the Dairy Manufacturers Building.

c. Location: Huff Gymnasium, Men's Old Gymnasium, Woman's Gymnasium, Skating Rink and Dairy Manufacturers Building.

d. Use: No comment.

e. Description of Project: Alteration and improvements consisting of additional filters, additional overflow drains, a surge tank and additional dressing rooms. Also, installation of evaporative condenser at the Skating Rink and the Dairy Manufacturers Building.

f. Justification: The alterations and improvements in the three pools are to comply with the recommendations of the State Department of Public Health, dated December 22, 1939. Neither funds nor materials have been available since the receipt of this report, but compliance is urged at the earliest possible date. Failure to meet these requirements will undoubtedly bring serious public criticism if the pools are not operated at acceptable standards. The State institutions, above all others, should meet the standards established by the State Department of Public Health.

Domestic drinking water is circulated through the compressors at the Skating Rink and the Dairy Manufacturers Building and returned to the water distribution system for use. This is a possible cross-connection and a source of contamination of drinking water, and is contrary to the standards of the State Department of Public Health. The elimination of this practice at the earliest possible date through the installation of evaporative condensers is urged to protect and safeguard the water supply to University of Illinois buildings.

g. Relation to other Projects: None.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Cost: Included in other operating costs.

Name of Project: REMODELING STOCK PAVILION

a. Cost: Building $75,000; Total $75,000.

b. Basic Reason for Need: Danger of accident or loss of life due to terra cotta falling from the cornices because of disintegration.

c. Location: On South campus.

d. Use: The pavilion is used for stock judging contests and many other occasions where many people assemble.

e. Description of Project: Removal of terra cotta cornice and trim and replacing with brick facing and wood cornice.

f. Justification: The exterior terra cotta work on the Stock Pavilion which was erected over thirty years ago is now in a very bad state of repair. Erosion and freezing have caused parts of the cornice to fall and cracks to appear in the supporting piers to the point where the building is unsafe. Because of the seriousness of the situation the State Legislature appropriated funds for repairs. The War Production Board recognized the need, but suggested temporary repairs to serve during the war-time emergency. These temporary repairs were made in order that the building might continue in use. Permanent repairs should be effected as soon as materials are again available. The Animal Husbandry Department needs this space constantly and the University is responsible for providing quarters which are unquestionably safe and useable.

g. Relation to Other Projects: None.

h. Priority: Preferred.

i. Biennium: First.

j. Operating Cost: Some reduction but not significant.

Name of Project: MODERNIZATION OF ELEVEN EXISTING BUILDINGS

a. Cost: Construction $1,493,000; Total $1,493,000.

b. Basic Reason for Need: Principally deferred maintenance because of inadequate funds, particularly from 1930 to 1942, and because of unavailability of materials and labor since 1942 due to the war.

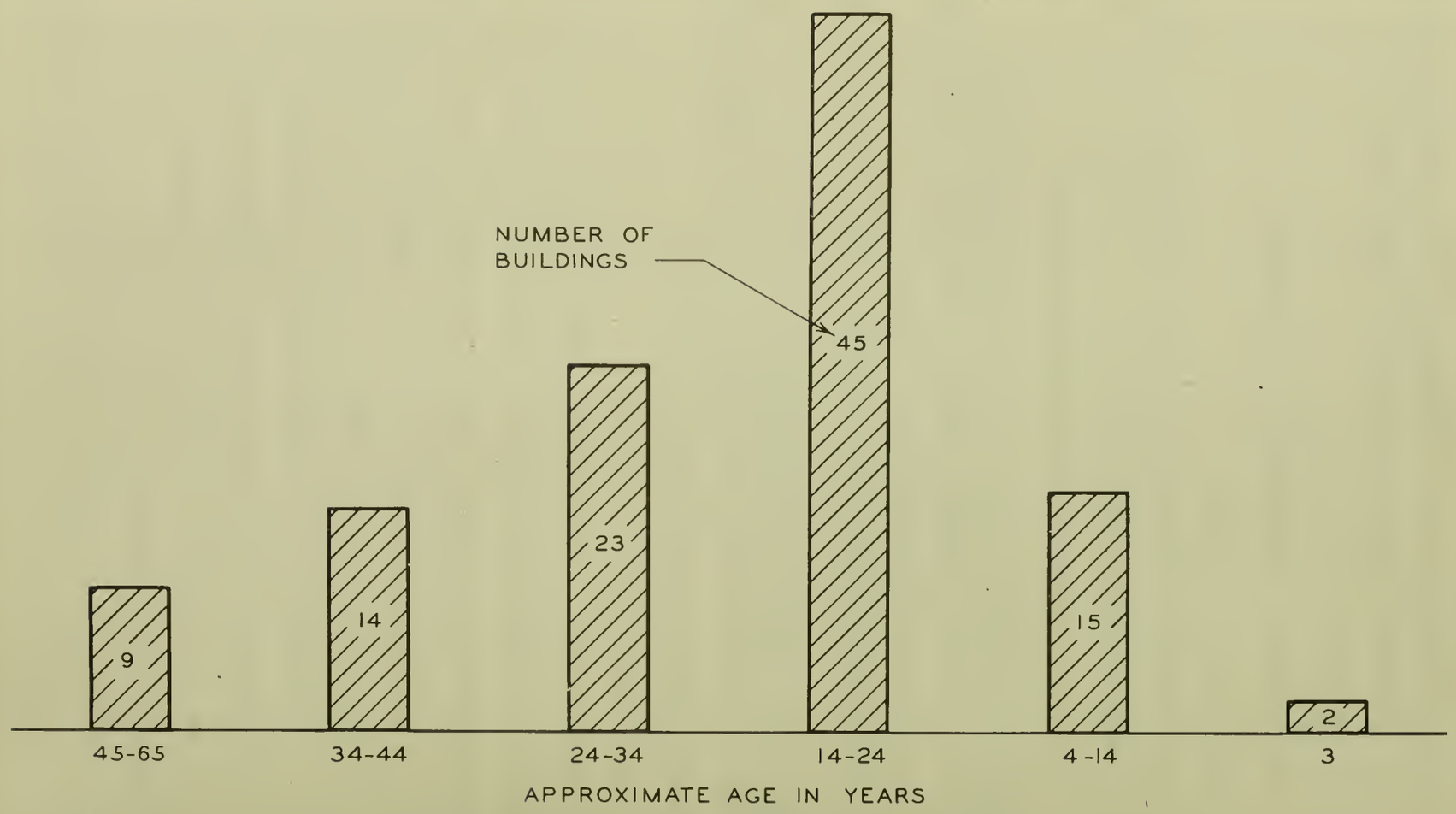
c. Location: All parts of the campus.

d. Use: No comment.

e. Description of Project: Modernization of eleven existing buildings by alterations and replacements is in heating and ventilating systems, raising the intensity of artificial illumination to modern standards, replacing old toilet fixtures and plumbing, installing automatic building heat controls and general improvements throughout the buildings.

f. Justification: The need for funds to modernize existing buildings is as great as that for the construction of new buildings. The life expectancy of the component parts of a building, such as floors, elevators, plumbing, heating, lighting, and ventilating systems, is such that the replacement of these parts over a period of 25 to 50 years must be provided if an acceptable standard of maintenance and usage is to be obtained and the state's investment preserved. Maintenance expenditures on the remaining portions of the building are such that a similar allowance must also be made to preserve the original condition of the structure.

The Investment in buildings in Urbana is about $22,000,000, as shown in the table following page 14. An average annual expenditure of not less than 2 per cent of the replacement cost of the building should be made for repairs and replacements and, therefore, the average annual expenditures for building repairs and replacements should be $440,000. However, during the past fifteen



AGE OF 108 MAJOR BUILDINGS

years, the average annual expenditures were only $220,000, or slightly less than one per cent of the total investment of two per cent.

Of the total of 108 major buildings and additions at Urbana, 23 have been in service from 34 to 65 years. The state, therefore, faces a major problem in the preservation of its investment, due to the age and the fact that the systematic rehabilitation of the buildings has not been made, primarily because of the lack of funds. The University faces the alternative of either tearing down such buildings, thereby losing the residual value in them, or making relatively large expenditures on them to catch up on the deferred maintenance.

In addition to preserving the state's investment, such a program will have real and practical values, such as:

(a) Healthful working conditions for all employees;

(b) Improvement in the morale of the staff through the provision of modern working facilities and the resulting improvement in employer-employee relationships and worker productivity;

(c) The public generally judges the standard of administration and efficiency of an institution by its visual impression of the standard of operation and maintenance of the institutional property;

(d) Failure to maintain buildings adequately results in requests from the occupants for new buildings. From a long-term point of view, it is definitely economical to provide a systematic rehabilitation.

The amount requested, or $1,493,000, represents the funds that should have been expended for this purpose during the past several years, but were not available due to limited appropriations and the unavailability of labor and material during the period of war.

g. Relation to Other Projects: No comment.

h. Priority: Preferred.

i. Biennium: Distributed through all three bienniums.

j. Operating Cost: No significant change in operating costs but with a tendency toward reduction.

SUPPLEMENT TO PROSPECTUS

PROJECT NO. 28. MODERNIZATION OF ELEVEN EXISTING BUILDINGS

Because of uncertainties which exist concerning the character of post-war demands on the University by returning veterans, it is essential that funds be available for remodeling portions of existing buildings for new uses. It is therefore requested that the title of Project No. 28 be changed to:

REMODELING AND MODERNIZATION OF EXISTING BUILDINGS

and that the following sentence be considered as added to the Description of Project: "This project also includes the remodeling of buildings or portions of buildings to adapt them to new uses."

The proposed revisions changes the project so that it is not restricted to "Eleven Existing Buildings" and permits the use of funds for remodeling as well as modernization.

September 23, 1944

Name of Project: IMPROVEMENTS RECOMMENDED BY
THE NATIONAL BOARD OF FIRE UNDERWRITERS

a. Cost: Construction, $110,000; Equipment $21,000; Total $131,000.

b. Basic Reason for Need: To provide additional water and equipment for use in fighting fires and a Fire Station to house the fire-fighting equipment.

c. Location: It is proposed to locate the Fire Station on the west side of the North campus.

d. Use: To protect life and property.

e. Description of Project: Extension of water main, purchase of 65-foot aerial ladder truck and a hose truck, construction of a new Fire Station, provide reserve electric lift pumps and install additional fire hydrants, all as recommended by the National Board of Fire Underwriters.

f. Justification: Funds for the above program are requested to comply with the recommendations made by the National Board of Fire Underwriters and outlined in their Report No. 295, under date of May 9, 1940, and published for the Cities of Champaign and Urbana and the University of Illinois. Since the survey was completed and the report published, neither funds nor materials have been available to comply with the recommendations. The University as a public institution believes that it should comply with these recommendations, and that failure to do so, in the event of loss of life or property, would result in serious public condemnation. A detailed copy of this report can be obtained from the National Board of Fire Underwriters, 85 John Street, New York City, or from the University of Illinois.

The extension of water supply mains is required to complete a grid distribution system necessary to supply water at sufficient volume and pressure for fire protection and for servicing the new buildings requested in this program.

The purchase of a 65-foot aerial ladder truck is recommended for the purpose of removing occupants from the top floors of existing buildings in the event of a major fire. This is a necessary asset to prevent loss of life in a major fire, since the older buildings are not provided with fire towers, fire escapes, or sprinkler systems.

The reserve hose truck equipped with a turret nozzle is required to combat major fires of high heat intensity where large volumes of water are needed.

The report of the National Board of Fire Underwriters (page 34) recommends that "..... a fire station specifically designed for fire service be built in the neighborhood of the present station." A new Fire Station is recommended because:

(1) Present station is located on a narrow service driveway remote from but leading into a heavily conjested thoroughfare approximately midway of the block between two busy street intersections. Vehicular traffic is frequently backed up by traffic-control lights at the street intersections, thus blocking the driveway from the Fire Station.

(2) Present station does not provide space or facilities for (a) housing additional fire fighting equipment, (b) training of personnel in the Fire Department evolutions, (c) physical training, development and conditioning of personnel, or (d) adequate living quarters.

(3) The present building should ultimately be demolished and further improvements cannot be justified.

The reserve electric circuits are recommended to provide dual source of electric energy to drive well motors, low and high lift pumps to insure continuous supply of water in the event of damage to or mechanical failure of the single circuits during a major fire.

g. Relation to Other Projects: Related to all present and proposed buildings because of the additional fire protection provided.

h. Priority: Preferred.

i. Biennium: Distributed through the three bienniums.

j. Operating Cost: A significant but not large increase because of additional staff required to operate new equipment.

Name of Project: ACOUSTICAL TREATMENT OF BUILDINGS

a. Cost: Construction $75,000; Total $75,000.

b. Basic Reason for Need: Difficulty experienced in conducting lectures and recitations because of excessive reverberation and excessive noise due to typing and other causes.

c. Location: Distributed through many buildings.

d. Use: No comment.

e. Description of Project: Installation of acoustical materials.

f. Justification: The University has followed the policy of providing acoustical treatment for new buildings in classrooms, lecture rooms and general offices with the object of improving teaching conditions and of reducing noise and promoting efficiency in important administrative and work areas. As funds were available, this policy has been extended to existing buildings lacking proper acoustical conditions for the best results in teaching or office work. Many of these present areas are as yet untreated. Modern practice demands that other types of occupancies also be treated, but those whose correction is contemplated in this project are the most urgently needed at the present time.

g. Relation to Other Projects: None.

h. Priority: Preferred.

i. Biennium: Distributed through three bienniums.

j. Operating Cost: None.

Name of Project: PHYSICAL PLANT SERVICE BUILDING

a. Cost: Construction $650,000; Equipment $40,000; Total $690,000.

b. Basic Reason for Need: Existing facilities are inadequate to meet even the present demands and cannot be practically expanded to meet future needs resulting from new construction.

c. Location: Immediately south of Abbot Power Plant.

d. Use: To provide adequate facilities for the shops, stores, and offices of the Operation and Maintenance Division of the Physical Plant Department.

e. Description of Project: Kind - New Building. Construction - Brick bearing walls, structural steel or reinforced concrete frame, reinforced concrete floor beams and slabs, and plain interior finish.

f. Justification: The present facilities assigned to the Operation and Maintenance Division of the Physical Plant Department are inadequate because:

1. Areas assigned the division are located in fourteen different buildings and scattered widely throughout the campus.

2. Present work areas are approximately 54 per cent of the total area required for the efficient and orderly arrangement of equipment.

3. It must be borne in mind that service facilities for the operation division have not been provided at the same rate as the growth of the University. The nature and volume of work handled by this division is determined by the needs of the University and these needs in turn are determined by such variable factors as the size of the University and the number, size, and type of buildings.

4. The factory inspector from the State Department of Labor has consistently recommended the rearrangement of equipment in shops to provide

definite aisle space, safe clearances, and working conditions for both employees and the public. The rearrangement of equipment cannot be accomplished in the present areas.

5. In the Wood Shop, the fire hazards which normally exist in a shop of this kind are very materially increased by an obsolete and inadequate dust collecting system and by an open painting and wood finishing space. The dust collecting system does not have capacity to remove shavings and sawdust from the power-driven equipment. The area available for painting and wood finishing is an unenclosed corner at the head of the stairs in a locker room which is used by students and which is without ventilation or means of temperature regulation. All finished wood-work is subject to damaging dust and dirt and to temperature and humidity changes of the entire building.

6. The Electric Shop is located in a basement (entirely below grade) of an academic building with only one small window directly to the exterior, and the area is without means of ventilation. It is unhealthy and violates all codes for human occupancy. No toilet facilities are available.

The use of the space is uneconomical and hazardous because of the excessive costs and physical hazards involved in the hand handling of large quantities of equipment and material up and down a single, narrow stair. A large percentage of the space is usable only for storage because of the presence of large ventilating ducts which leave a clearance below of only five feet.

7. The Plumbing Shop is without conveniences for workmen and it lacks storage space for any tools, material, or equipment. No separate space is available for the repair and adjustment of thermostatic controls, refrigeration equipment or for the safe storage of parts or equipment in the process of repair. Standard lengths of pipe must be carried outdoors to be turned end for end in order to thread both ends of the pipe.

8. The Paint Shop and storage of flammable paint materials is located in a non-fireproof structure which also houses a furniture repair shop and key shop. All original keys for locks on University buildings are stored in a cabinet in this structure, and they would probably be lost in the event of a fire.

The factory inspector for the State Department of Labor has requested the fireproofing of the area used for the storage of flammable paint materials. The area used for the furniture repair shop is subject to all the fire hazards of the Paint Shop plus the added hazards of the highly flammable and combustible nature of upholstering materials.

9. No shop space or headquarters are available for construction labor, cement finishers, or brickmason crews.

10. The space assigned to the machine shop does not permit an orderly or safe operating arrangement of machines. As located, few of the machines permit the working of full length stocks of materials without overlapping adjacent machines. The lack of aisle space and the crowded arrangement of equipment represent a real hazard to employees from stumbling accidents in the handling of heavy materials and equipment.

The electric and gas welding, and the forge equipment are all located in an unenclosed corner of the shop and this represents a real health hazard because of the lack of adequate ventilation for the removal of welding fumes or facilities to prevent eye injuries to other employees from high intensity arc flashes. Other employees and the public are subject to all the physical and health hazards the same as the machinists because this shop provides the only interior means of access between the garage and the store and tool room.

11. The Steam Distribution Shop is located in a partially excavated area of an academic building and is without direct truck access or direct

facilities for handling heavy valves, expansion joints, and other equipment that must be frequently taken in for repairs and overhauling. The shop has a dirt floor, the entrance door has a clear head room of only 5'3", and the clearance under the beams in the shop area is only five feet.

The shop is without means of natural lighting; there are no provisions for ventilation; the artificial lighting is inadequate and creates a definite eye hazard because of the low ceiling. There are no conveniences for the workmen and the area is unhealthy and violates all codes for human occupancy. The shop is located directly below the Engineering Library and creates an additional fire hazard to the valuable collection of books. Being so located, the shop is also a source of interference to the academic activities due to the necessary traffic, noise and dirt.

12. The administrative offices are crowded into an area approximately one-third of that which is necessary for the handling of the large volume of work assigned to the division. The only access to the offices for the general public, office staff, and employees who must consult with their supervisors frequently during the day, is by means of a single-width winding stair with limited head room and is located approximately sixty feet from the entrance of the building.

Many necessary items of work such as maintenance of records and adequate files, development of operation and maintenance programs, etc., cannot be conducted because of the lack of space and facilities to accommodate sufficient staff.

13. The present decentralization is conducive to a duplication of equipment, personnel, and records, prevents unified organization of control and the easy and prompt transmission of orders and subsequent check on execution

of allocated assignments. It is a major factor affecting the cost of maintenance and job order work because of (a) delays and misunderstandings in the transmission of orders; (b) time lost in travel between various units; (c) time required for transmission and assembly of necessary supplies from scattered store-room areas; and (d) duplication of additional personnel for supervision and follow-up of work in process. It is also conducive to loafing, deferment of work and unauthorized side trips of employees for personal matters.

g. Relation to Other Projects: This project is related to all other projects for the construction of new buildings in that the functions to be housed in this building provide service for all University departments.

h. Priority: Preferred.

i. Biennium: Second

j. Operating Cost: $41,400 per year for operation and maintenance.

Name of Project: VOLATILE STORAGE PLANT

a. Cost: Construction $34,000; Equipment $41,000; Total $75,000.

b. Basic Reason for Need: To reduce the hazards in the storage of flammable liquids.

c. Location: In the area immediately northwest of the Abbott Power Plant and adjacent to the Illinois Central Railroad.

d. Use: To provide central dock storage and dispensing facilities for the handling of all bulk flammable liquids used by the University of Illinois.

e. Description of Project: Kind - New building. Construction - Brick bearing walls, reinforced concrete floor beams and slab, composition roof, plain interior finish.

f. Justification: The storage of ether and other flammable solutions in the Chemistry Building is a direct violation of standards of the National Board of Fire Underwriters.

The University was severely criticized by the National Board of Fire Underwriters in their report No. 295, dated May, 1940. A copy of this report may be secured from the National Board of Fire Underwriters or is available for inspection at the University of Illinois.

The University as a public institution believes that it should comply with standards recommended by the National Board of Fire Underwriters, and that failure to do so would result in a serious public condemnation in case of loss of life or public property.

Inspectors from the Sixth Service Command who have had the responsibility for the inspection of facilities used for national defense research have been insistent that bulk storage of flammable liquids be removed from the Chemistry Building and that the quantity of such materials in the building be limited to one day's supply.

Flammable paint materials are stored in an unprotected frame residence which is also used for a paint shop, furniture repair shop, and key shop. The factory inspector of the State Department of Labor has condemned the present method of storage of these materials.

We propose to combine the storage of all bulk flammable liquids used by the University in a building designed specifically for that purpose and to provide dispensing facilities for the issuance of supplies in accordance with standards established by the National Board of Fire Underwriters.

g. Relation to Other Projects: None

h. Priority: Preferred

i. Biennium: First

j. Operating Cost: $4,500

Name of Project: MODERNIZATION AND REPLACEMENT OF ELEVATORS

a, Cost: $16,000

b. Basic Reason for Need: To maintain adequate and safe elevator service.

c. Location: McKinley Hospital, Library, Ceramics Building

d. Use: No comment.

e. Description of Project: One passenger elevator in McKinley Hospital and one in the Library are to be modernized. The elevator in the Ceramics Building is to be replaced.

f. Justification:

McKinley Hospital

The door hangers and tracks on four openings of the passenger elevator in the main wing are badly worn, obsolete and non-repairable. The existing single-speed A. C. motor and manual leveling features are obsolete and unfit for use in a hospital where it is necessary to move hospital beds and other equipment to and from the elevators. A 2-speed A. C. motor with controller and leveling mechanism are to be installed to replace the existing equipment. The existing single-phase cam motor is unreliable and results in numerous outages and requires excessive maintenance. This is to be replaced by a 3-phase motor having inherent mechanical and electrical advantages over the single-phase motor.

Library

The elevator door hangers and tracks on the main elevator are worn, obsolete, and non-repairable. The existing single-speed A. C. motor and manual leveling features are obsolete and not suitable for handling book trucks and equipment. A 2-speed A. C. motor and automatic leveling system are to be installed. Existing single-phase cam motors are unreliable and require excessive maintenance. They are to be replaced by two 3-phase motors.

Ceramics Building

This elevator is an obsolete drum type machine and has wood rails, hemp rope actuated governor, a wood platform, and is installed in an open hatch. The safety features are unreliable and the open hatch constitutes a definite fire hazard. This elevator is to be replaced with a modern, fully automatic, all steel installation and the hatch is to be enclosed.

g. Relation to Other Projects: None

h. Priority: Preferred

i. Biennium: Distributed over the first and second bienniums.

j. Operating Cost: None

Name of Project: WATER STATION PLANT IMPROVEMENTS

a. Cost: Construction $85,000; Equipment $35,000; Total $120,000.

b. Basic Reason for Need: To provide adequate water supply for existing and proposed new buildings, and for fire protection as recommended by the National Board of Fire Underwriters.

c. Location: The two new wells will be located north of the Old Gymnasium and Gymnasium Annex; the proposed water storage basin will be located east of the present storage basin; addition to the present Filtration Plant.

d. Use: No comment.

e. Description of Project: Two new wells with minimum of 600 g.p.m. capacity; one 250,000 gallon clear water storage basin; addition to Filtration Plamt to provide pump room; complete study and investigation for source of new water supply.

f. Justification: The National Board of Fire Underwriters in their report No. 295 dated May, 1940, recommended (a) two additional wells or (b) one additional well and one 250,000 gallon clear water storage basin.

Since the above survey and report was completed, several new buildings have been added on the Urbana campus, materially increasing the demand for water for domestic use and for reserve in the event of a major fire. The present building program contemplates the addition of a number of new buildings which would further increase the demand on the water system.

It must be borne in mind that the proposed new wells and clear water storage basin are sufficient only to take care of the immediate projected building program. This project also includes the engineering service necessary for study and investigation of future source of water supply.

The present source of supply appears to be relatively meager from the standpoint of probable future withdrawal. Twenty years ago, the combined pumpage by the University and the two adjoining cities was of the order of 3,500,000 gallons per day. Prior to World War No. II, it had reached approximately 4,500,000 gallons per day and has remained at that level up to the present time. Under the influence of this pumpage rate, the water level in the present field appears to have receded 13 feet during the period 1935 to 1943. Continuation of the receding water level in the present field makes investigation of a new source of supply for future use imperative.

The construction of a new pump room for the Filtration Plant is necessary to relocate the low and high lift pumps where they will be under constant supervision of the Water Station operators. At the present time, the high and low lift pumps are located in a pump pit in the basement of the engine room of the Old Power Plant and are operating without close supervision. The main pipe connections between the Filtration Plant and the high and low lift pumps pass through a tunnel and the basement of the old boiler room, and are subject to deterioration. As located it is practically impossible to ascertain the extent of the present deterioration or to repair pipes in case of failure. A mechanical or electrical failure in the pump motors or pipe system would interrupt water supply.

g. Relation to Other Projects: Although the improvements are needed without the addition of new buildings, additional water supply capacity is included for the new buildings proposed.

h. Priority: Preferred.

i. Biennium: To be distributed over first and second bienniums.

j. Operating Cost: Included in other projects.

Name of Project: ALTERATIONS AND EXTENSIONS OF SEWERAGE SYSTEMS

a. Cost: $82,000

b. Basic Reason for Need: To provide proper drainage for present and proposed buildings.

c. Location: Distributed over the entire campus.

d. Use: No comment.

e. Description of Project:

Sanitary Sewers

(a) New 8" sewer from Dairy Manufactures Building east to Lincoln Avenue, north to Michigan Avenue, east on Michigan Avenue to Busey.

(b) 8" sewer from corner of Sixth Street and Gregory Drive east on Gregory Drive to Commerce Building.

(c) 8" sewer from Peabody Drive west of Fourth Street north to Gregory Drive.

(d) 12" Interceptor sewer from southwest corner of Harker Hall east to Goodwin Avenue and north on Goodwin to Green Street.

Storm Sewers

(a) 36" sewer from Peabody Drive on Fourth street north to the boneyard between Green and Healey Streets.

(b) Extension of 24" sewer from west side of Illini Union Building to south side of Administration Bldg.

(c) New 24" sewer from Dairy Manufactures Building east to Lincoln Avenue and north on Lincoln Avenue to Iowa Street.

f. Justification: The new sewers are to provide an outlet for storm and sanitary drainage necessary for the proposed building program. The interceptor sewers are necessary to provide relief for the present overloaded sewers from existing buildings.

g. Relation to Other Projects: Related to all projects for new building construction.

h. Priority: Preferred

i. Biennium: Distributed over first and second bienniums.

j. Operating Cost: None.

Name of Project: EXPANSION OF TELEPHONE SERVICE

a. Cost: Construction $5,000; Equipment $58,000; Total $63,000.

b. Basic Reason for Need: Capacity of present intercommunicating University exchange has been reached. Additional capacity is necessary for continued operation and for the new buildings requested.

c. Location: Distributed over the entire campus.

d. Use: No comment

e. Description of Project: The existing 600-line private automatic dial switchboard is to be increased to 800-line capacity.

Telephone cable distribution system is to be expanded to provide additional capacity for safe operating margin of present load, to provide spare cable pair for normal growth, and spare cable for new buildings requested in this program.

Bell telephone branch exchange installed to centralize all Bell telephone service through one switchboard.

f. Justification: The existing 600 line automatic intercommunicating exchange is operating at 97 per cent of the maximum available capacity with no margin for normal load growth, no spare circuits for exchange outage or spares for projected new buildings. The line finding and trunk equipment is operating at 200 per cent rated capacity resulting in lost calls, excessive wear and subsequent increased outages for service.

An additional 100 pair main trunk cable is to be installed to provide safe margin for normal operation and to provide service for new buildings requested in this program.

Existing telephone service is now provided through 525 direct Bell Telephones to the local city exchange. As a result, each station is listed in the local directory, and it is, therefore, extremely difficult for the public

to reach members of the University staff on the campus. This is particularly true on long distance calls where the party is not acquainted with the local communication system and does not have the local telephone number. In addition, members of the University staff or strangers can make long distance calls without proper authority and unauthorized expenditures may, therefore, be made. It is proposed to place all existing direct Bell telephones on a private branch exchange, thereby centralizing all incoming and outgoing calls through one switchboard.

g. Relation to Other Projects: Related to other projects for new construction in that it provides telephone service.

h. Priority: Preferred.

i. Biennium: Distributed over first and second bienniums.

j. Operating Cost: None.

Name of Project: STREET AND ROAD IMPROVEMENTS

a. Cost: $65,000

b. Basic Reason for Need: To improve street and road conditions adjacent to and through the campus.

c. Location: Green Street; Springfield Avenue; Locust Street.

d. Use: No comment

e. Description of Project:

(1) Repave Green Street between Wright Street and Mathews Avenue.

(2) Repave Springfield Avenue between Wright Street and Goodwin Ave.

(3) New pavement extension of Locust Street between Gregory and Stadium Drives.

f. Justification: The Green Street pavement is of brick constructed in 1895, now in poor condition and inadequate for present traffic loads. It is proposed to replace this with a double roadway of concrete construction which will materially reduce present serious hazards for both motorists and pedestrians, as well as to provide an adequate roadway for a main arterial highway through the campus.

The Springfield Avenue pavement is in very poor condition, similar in construction and age to the Green Street pavement. It is proposed to replace the old brick with concrete and widen the present narrow pavement to the east.

The Green Street and Springfield Avenue improvements were deferred to conform to W.P.B. restrictions on the use of critical materials. These improvements represent long standing needs and should be executed as soon as materials become available.

The new pavement extension of Locust Street will provide access to the proposed Physical Plant Service Building and Garage.

g. Relation to Other Projects: Items (1) and (2) above not related to other projects; Item (3) is part of the Physical Plant Service Building project.

h. Priority: Preferred.

i. Biennium: Distributed through first and second bienniums.

j. Operating Cost: None.

Name of Project: SIDEWALK ADDITIONS

a. Cost: $12,000

b. Basic Reason for Need: New walks needed because of increased traffic and to replace inadequate flagstone and cinder walks.

c. Location: See Item e Description of Project.

d. Use: No comment.

e. Description of Project: It is proposed to construct the following sidewalks on the campus:

(1) East Broadwalk

(2) Completion of walk terminals on north side of Woman's Playfield.

(3) Concrete walk between west Broadwalk and Old Agriculture Building replacing flagstone walk.

(4) Completion of sidewalk through Forestry west and south of McKinley Hospital.

(5) Completion of Mathews Avenue walk from Boneyard to Springfield Avenue, including bridge over Boneyard.

f. Justification: Items (1), (2), and (5) are new walks found necessary because of increases in enrollment and increased traffic accompanying campus development already realized. Items (3) and (4) are new concrete walks replacing inadequate flagstone and cinder walks respectively. The construction of some of these walks was deferred because of W.P.B. construction limitations and they will be needed urgently in the immediate post-war period.

g. Relation to Other Projects: None

h. Priority: Preferred

i. Biennium: Distributed over first and second bienniums.

j. Operating Cost: None

Name of Project: LANDSCAPE PLANTING, URBANA

a. Cost: $64,000

b. Basic Reason for Need: See f Justification.

c. Location: See e Description of Project.

d. Use: No comment.

e. Description of Project: Consistent with the program of rehabilitation of existing plantings around major buildings on the campus, it is proposed to remove overgrown and unsightly planting and replace with new material selected to conform with the general planting scheme which has been adopted around the new buildings for:

Lincoln Hall	Old Agriculture	Altgeld Hall
Auditorium	New Agriculture	M. E. Laboratory
Noyes Laboratory	Woman's Gym	E. E. Laboratory
Entomology	Huff Gym	Natural History
Physics Laboratory	Ceramics	Stadium
Talbot Laboratory	Commerce	Engineering Hall

f. Justification: In the case of all buildings listed, no attempt has been made to replace "foundation planting" for approximately twenty years. Material is old and ragged, beyond the point where pruning or similar efforts of maintenance will maintain satisfactory appearance. The only practical solution is complete replacement.

g. Relation to Other Projects: None.

h. Priority: Preferred

i. Biennium: Distributed over first and second bienniums.

j. Operating Cost: None.

Name of Project: HEALTH AND PHYSICAL EDUCATION BUILDING

a. Cost: Construction $2,050,000; Equipment $250,000; and Total $2,300,000.

b. Basic Reason for Need: Inadequacy of present facilities.

c. Location: Immediately east of the Huff Gymnasium on the corner of Sixth Street and Gregory Drive.

d. Use: To provide adequate physical facilities for inter-collegiate, intramural, recreational, and physical education program, and to centralize the administrative facilities of the Athletic Association.

e. Description of Project: Kind - New building. Construction - Brick bearing walls with hollow brick or tile backing, steel or reinforced concrete structural frame, reinforced concrete floors with various wearing surfaces, hollow tile partitions, slate roofing, plain interior finish, wood doors, windows and frames, acoustically treated ceilings.

f. Justification: The trend evidenced before the outbreak of the present war in the field of intramural activities is one that must be recognized in post-war planning. Out of the then 9,000 male students, approximately 3,500 were participating on one or more of the organized intramural teams, besides the large numbers that were playing golf, tennis, and softball as unorganized sports. All of these students make use of the athletic facilities provided.

Because of the inadequacies in present facilities, the most urgently needed structure for the activities indicated above is a new Health and Physical Education Building. Early studies have provided seating facilities for 14,000 to 16,000 persons with a cantilever type roof, completely eliminating undesirable exposed supports. The building should provide needed space for all intramural sports in the form of office space, game rooms, locker rooms, etc. Plans in connection with this building should also provide for an improvement of

swimming pool facilities. The present pool has no provision for high diving. The pool, with a seating capacity of 1,000, should be designed with adequate dressing rooms and lockers, particularly from the standpoint of sanitation and convenience.

The construction of such a building will permit the consolidation of most of the activities of the Athletic Association under one roof, including the coaching and administrative staff, the intramural department, the ticket office and the store rooms, thereby contributing to closer contact and, consequently, better operating conditions. The Association has been repeatedly advised by the auditors that better physical arrangements are necessary for the proper distribution and control of tickets and athletic activity coupon books. Such changes are not physically possible at the present time in existing University buildings.

Emphasis should also be placed on the construction of well-lighted and well-ventilated courts for handball, badminton, and squash. While it is true that some courts are available in the Huff Gymnasium, all efforts at correctly ventilating them have been unsuccessful, and their efficient utilization reduced accordingly and demands triple the facilities available.

The use of this building would not be confined to athletics and sports entirely. The need for a center to be used for large convocations has long been felt. At the level of enrollment prior to the outbreak of the war, it was impossible to issue more than three tickets to candidates for graduation. Such large functions as Farm and Home Week, the Farm Sports Festival, the All-State Chorus and All-State Orchestra performance held in conjuction with the Annual Teachers' Conference, certain numbers on the Star Course program, the High School Basketball Tournament, and a general convocation of all University students, are not possible in their entirety at the present time because of limited seating capacity.

One of the greatest needs for such a building is that of the Illinois State High School Basketball Tournament which has been held annually in Huff Gymnasium during the month of March. It has been the experience of the Ticket Office of the Athletic Association that the seats for this one function alone, which is a source of good public contacts, could have been sold in numbers three or four times that now possible. It has been the policy in the past few years to discourage the general public, even to the extent of giving preference to students in the competing schools and the coaches and principals throughout the State. Indiana has conducted such a tournament annually in the Butler Field House in Indianapolis for the past several years, with an attendance of twenty thousand, and with this capacity has been unable to meet the demand of the general public. Because many of these who attend are potential students for the University, and because we are concerned with developing and maintaining a strong program of health education, physical education and athletics in the High Schools of the State, we feel that it is desirable to satisfy the demands of as large a number as possible and to retain this annual sports event at the University.

Under present conditions, it is not possible to follow the plan that many of the other Western Conference Schools follow, in issuing an Activity book to each student. With the present seating capacity of Huff Gymnasium, it is impossible to provide seats for the student body, the staff of the University, or the general public, for our home basketball games. Such conditions are not comparable to other institutions of the enrollment or standing of the University of Illinois.

The Board of Directors of the Athletic Association expects to continue the policy of turning surplus funds back into facilities for the students, whenever circumstances permit a return to normal operation.

g. Relation to Other Projects: None.

h. Priority: Preferred.

i. Biennum: First.

j. Operating Cost: $112,500 per year for operation and maintenance.

PART III

THE CHICAGO CAMPUS

SECTION A

GENERAL DISCUSSION

PART III. THE CHICAGO CAMPUS

SECTION A. GENERAL DISCUSSION

1. Introduction.--The College of Dentistry, Medicine, and Pharmacy of the University of Illinois are located near the Cook County Hospital in the West Side Medical Center District of Chicago.

The campus proper covers 10 acres within the city block bounded by Polk Street on the north, Taylor Street on the south, Wood Street on the east, and Wolcott Street on the west. An additional acre near by is occupied by the Chicago Illini Union. The enrollment in the Chicago Colleges for the year 1939-40 was 1,280 students; 1941-42, 1,343 students; and the Spring of 1944, 1,007 students. In 1939-40 there were 102 women included in the total; in 1941-42 there were 87 women; and in the Spring of 1944 there were 69 women.

The Chicago Colleges of the University of Illinois are situated in the urban industrial center of Chicago and Cook County with a population of nearly four million. Its colleges and hospitals draw students and patients from all over the state. As a relatively young medical center of the country, it is experiencing a steady growth in its activities and influence. It compares favorably in many respects with older medical centers elsewhere. Its growth, however, has been uneven and has resulted in some disproportion in emphasis on various special fields of medicine both in terms of Physical Plant and departmental support and activity. The proposed post-war program is designed to bring the whole program into effective balance educationally and physically. Undoubtedly the University has the opportunity to develop a leading medical center of the Middle West and perhaps of the country. The proposed post-war building program is designed to accomplish this broad objective in an orderly way.

2. Present Plant.--At the present time, the University has 6 major buildings on the Chicago campus representing a total cost of $7,345,000 and

containing a total of 646,100 square feet of floor area. The oldest was built in 1925 and the newest in 1937. The total cost of land owned at this time by the University of Illinois is $572,000.

In addition to these buildings owned by the University, the State Department of Public Welfare has 2 major buildings, completed in 1930 and 1939, costing a total of $1,684,000 and containing a total of 164,000 square feet of floor area. These give a total for the Chicago campus of 8 major buildings costing $9,029,000 and containing 810,700 square feet of floor area.

It should be noted that only the Dental, Medical, and Pharmacy Building represents a facility which was constructed by the University for the purpose it now serves and is being used substantially as originally built. The Chicago Illini Union was formerly the Pharmacy Building and was remodeled in 1941 for its present purpose. The remaining buildings were constructed by the Department of Public Welfare and were subsequently transferred to the University.

The Illinois Neuropsychiatric Institute and the Institute for Juvenile Research occupy important positions on the Chicago campus but are still owned by the Department of Public Welfare. The University controls the teaching and research carried on in these institutes and maintains them on a cost basis.

3. Campus Development.—Two years ago last July the State Department of Public Welfare transferred to the University of Illinois all the buildings in the Research and Educational Hospitals except the Illinois Neuropsychiatric Institute and the Institute for Juvenile Research.

In the intervening period, major changes in the University program have been brought about both by the war and by the requirements of normal growth. These changes have been reflected in the hospital remodeling program and in plans for post-war development. In this process the Building Committee of the

Chicago Colleges has formulated a program of education and research needs which has become the basis of studies for future physical growth. The plan for expansion is designed to be carried out within a ten-year period but it is estimated that this plan will meet the probable needs for a period of thirty years. The realization of this plan will put the University in a position of equality with other professional schools.

The expansion plan involves more, however, than improvement only of those facilities provided by the University itself. Other agencies, notably the State Department of Public Welfare, the State Department of Public Health and the Presbyterian Hospital are well established in the locality and have a vital interest in development plans. To serve this group an area of approximately 40 acres, including the University campus, has been designated the Illinois Medical Center. This area is to be available for expansion of the four agencies mentioned. The University expects to remain an active working unit within the group and all plans here proposed recognize the interests and needs of the other institutions. They are intended to accord with the ultimate development of the Illinois Medical Center.

The Center, in turn, bears a similar relation to the larger Medical Center District. That District, 305 acres in size, bounded by Congress Street, Ashland Avenue, Roosevelt Road, and Oakley Boulevard, has been established by state law as an area for the development of medical services. The Medical Center Commission, acting under the law, is undertaking the large task of stimulating development plans in all interested institutions, leading towards an ultimate unified plan. It has given its approval to the proposed plans for the Illinois Medical Center. Dr. R. B. Allen, Executive Dean of the Chicago Departments and Dean of the College of Medicine, is a member of the Commission. Also on the Commission are Dr. Walter H. Theobald, a member of the College of Medicine staff, and Mr. George A. Barr, a former member of the Board of Trustees.

COMMUNITY RELATIONS

PLANS ARE BEING MADE FOR AN ENLARGED PROGRAM OF POST GRADUATE ADULT EDUCATION.
IN THE CITY OF CHICAGO
THE TOTAL NUMBER
OF PEOPLE OVER TWENTY
IS ABOUT
TWO AND ONE THIRD
MILLION

2,300,000

EACH YEAR THE CHICAGO DEPARTMENTS
HAVE CONTACTS WITH

1200	STUDENTS
1000	DOCTORS
1000	EMPLOYEES
25000	PATIENTS
12000	VISITORS
TOTAL	39,200

WITH THE LARGER GROUP THE UNIVERSITY HAS LITTLE OR NO CONTACT SOME OF THEM MAY NEED MORE EDUCATION SOME OF THEM MIGHT BE INTERESTED IN THE EDUCATIONAL AND RESEARCH CONTRIBUTIONS FROM THE PROFESSIONAL COLLEGES.

THE VISUAL EDUCATION BUILDING AND THE PROJECTS AT THE MUSEUM OF SCIENCE AND INDUSTRY WILL SERVE THE SAME WAY

EVEN IN THE SMALLER GROUP THERE MAY BE SOME WHOSE CONTACTS WITH THE UNIVERSITY HAVE FAILED TO GIVE THEM A FULL UNDERSTANDING OF ITS EDUCATIONAL SERVICES

CONCLUSION - THE UNIVERSITY MAKES ITSELF KNOWN TO MANY PEOPLE THROUGH EXTENSION ACTIVITIES

Within the District several functional units are anticipated. The Illinois Medical Center constitutes one of these: The Cook County Hospital group with an assigned expansion area of approximately 35 acres constitutes another; and still other medical groups are expected to develop in the area west of Damen Avenue. It is hoped that these will include a Veterans' Health Center, other Government hospitals, other medical schools, and private hospitals such as a childrens' hospital, a lying-in hospital, an isolation unit, and a convalescent hospital. The eventual plan is for a District which will provide a well-balanced group of medical service and teaching institutions.

By virtue of its forward-looking educational program, the University of Illinois occupies a leading position in the District. In that position, it has the opportunity of setting an outstanding example of progressive development. The final success of the Medical Center District program will depend in great part upon developments realized by the institutions already established. Energetic leadership by the University will point the way to even more far-reaching results than the full achievement of its own program will represent. We believe such leadership can be demonstrated by carrying out the expansion here proposed.

4. Colleges and Schools.—Listed in the accompanying table are the several departments of the three colleges which indicate the major divisions according to specialties in which undergraduate and graduate teaching activities are conducted:

COLLEGES AND DEPARTMENTS ON CHICAGO CAMPUS

COLLEGE OF MEDICINE

1939-40 Enrollment — 636

Departments of:

Anatomy
Bacteriology and Public Health
Biological Chemistry
Criminology, Social Hygiene and Medical Jurisprudence
Dermatology
Laryngology, Rhinology and Otology
Medicine
Neurology and Neurological Surgery
Obstetrics and Gynecology
Occupational Therapy

Departments of:

Ophthalmology
Orthopaedic Surgery
Pathology
Pediatrics
Pharmacology, Materia Medica, and Therapeutics
Physiology
Psychiatry
Radiology
Surgery
Illustriation Studios

COLLEGE OF DENTISTRY

1939-40 Enrollment — 228

Departments of:

Admitting Clinic
Dental Clinics
Dentistry for Children
Histology
Medical and Dental History
Applied Materia Medica, and Therapeutics

Departments of:

Operative Dentistry
Oral and Plastic Surgery
Orthodontia
Pathology
Prosthetic Dentistry
Radiology

COLLEGE OF PHARMACY

1939-40 Enrollment — 233

Departments of:

Chemistry
Pharmacy

Departments of:

Pharmacognosy

5. Educational Objectives.—The educational objectives of the Colleges of Medicine, Dentistry, and Pharmacy are to provide fully adequate opportunities for the study of medicine, dentistry, pharmacy, nursing, and all necessary sub-professional technical subjects such as occupational therapy, physical medicine, clinical laboratory technology, and dental laboratory technology (dental hygienists). The University recognizes that as a state institution its educational programs in these professional fields are essential to help meet the great health needs of the state. Private universities in Illinois share in meeting this need, but the University has recognized that its responsibility is such that it must maintain a large program in the medical sciences. Evidence of this is the fact that the College of Medicine is the largest medical school in the country.

The program in all three colleges meets minimum educational requirements and in some areas is highly distinguished. In certain departments, however, there are relative deficiencies. The principal objective in the immediate post-war period is to make a significant improvement in those departments and most importantly to bring the entire educational and research program into balance, eliminating existing relative over-emphasis on certain clinical specialties which are primarily concerned with graduate studies. The departments which need immediate expansion are Medicine, Surgery, Obstetrics and Gynecology, and Pediatrics, all of which are essential to any well-conceived program of undergraduate medical education.

An important example of a continuing effort to improve existing educational opportunities is illustrated by the proposed Library-Museum portion of the Visual Education project which contemplates significant improvement in visual technics as applied to the medical sciences.

Up to the present time a major effort has been exerted to meet high standards of undergraduate and long-term graduate (residencies and fellowships) educational requirements. Very little has been undertaken in the short-course post-graduate, education for professional health personnel in cooperation with affiliated hospitals such as Presbyterian and Cook County and with professional societies and State Departments of Public Health and Public Welfare. Chicago has the opportunity to realize some of its great potentialities as a national teaching center in this program.

A related objective is to develop a program in the field of public health administration which will provide opportunities for graduate training of community health officers. This program is to be coordinated with the State Departments of Public Health and Public Welfare and with professional societies. It has a major objective, the study of the over-all health needs of the State of Illinois. Information so gained will be of value in the teaching of preventive medicine and the sociology and economics of medical care for undergraduate and graduate students. It will be of further value in personnel guidance and placement of graduates in practice. Importantly it will help to provide a continuing survey of the health needs of the people which will automatically coordinate the educational and service functions of professional societies and the State Departments of Health and Welfare with the program of the University of Illinois.

An important integrating function and objective of the University's program in medical science is that of research. Progress in medical science is rapid and accelerating. The University of Illinois has a fine record of achievement and it is a major objective to mobilize increasing support for this vital phase of the entire program. Increasingly medical research involves cooperation among several specialists and departments. An example of this is the University's

new program of education and research in aeronautics, and an important objective of the Chicago Colleges is to develop specific research projects which will contribute to this important field. Numerous examples could be cited showing the close relationships and cooperation of numerous departments in individual colleges and between colleges.

The justifications of the specific projects herein proposed are discussed under the project headings.

6. Statistical Information.--The following table shows the enrollment of students in the Chicago Colleges from 1935 to 1944:

ENROLLMENT IN CHICAGO COLLEGES

For the years 1935-36 to 1943-44

Year	Enrollment in Schools				Total
	Dental	Medical	Pharmacy	Graduate	
1935-36	147	640	219	168 (-90)*	1,084
1936-37	165	646	233	160 (-70)	1,153
1937-38	202	648	230	183 (-34)	1,245
1938-39	223	644	247	212 (-89)	1,268
1939-40	228	636	233	235 (-98)	1,280
1940-41	227	617	224	200 (-74)	1,226
1941-42	229	647	304	153 (-27)	1,343
1942-43	231	671	230	71	1,203
1943-44	235	676	76	50 (- 6)	1,031
Spring 1944	236	681	54	39 (- 3)	1,007

* Duplicates registered in one of the other colleges also.

The requirements for additional buildings are based upon factors other than estimated increase in student enrollment.

A list of major buildings giving date of construction, total cost to date, floor area and cost per square foot of floor area is shown in the following table:

MAJOR BUILDINGS ON CHICAGO CAMPUS

Name of Building	Date Constructed	Total Cost to date	Floor Area sq. ft.	Cost of Floor Area sq. ft.
Buildings Owned by the University of Illinois:				
Chicago Illini Union		$ 236,000	44,600	$ 5.30
Dental, Medical and Pharmacy Building	1925, 1931 and 1937	3,743,000	399,000	9.38
General Hospital	1923	1,940,000	191,000	10.16
Dining Hall and Kitchens	1929	197,000	16,000	12.31
Illinois Surgical Institute for Children	1923, 1936	640,000	53,300	12.01
Nurses' Home	1929	184,000	25,900	7.10
Power Plant and Incinerator	1925, 1937 and 1941	405,000	16,300	24.23
Total		$7,345,000	746,100	
Buildings Owned by the State Department of Public Health:				
Illinois Neuropsychiatric Institute	1939	$1,300,000	127,000	10.24
Institute for Juvenile Research	1930	384,000	37,600	10.21
Total		$1,684,000	164,600	
TOTALS FOR BUILDINGS ON CHICAGO CAMPUS		$9,029,000	910,700	

The investment to date in equipment on the Chicago Campus is shown in the tabulation given below:

INVESTMENT IN EQUIPMENT ON CHICAGO CAMPUS

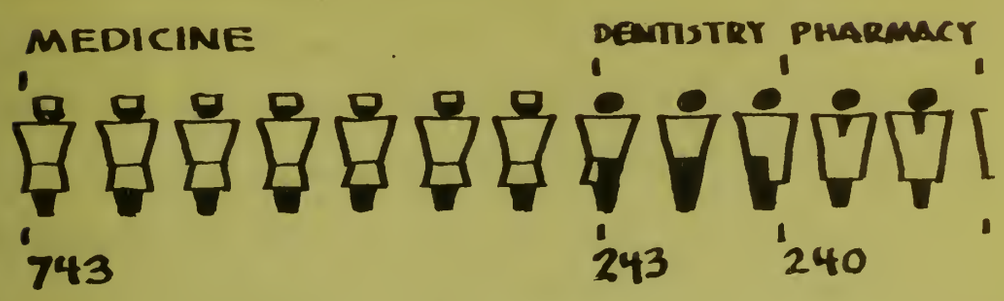
General Administrative offices	$ 12,638.37
College of Medicine	571,928.67
College of Dentistry	327,987.31
College of Pharmacy	72,271.05
Research and Educational Hospitals	168,203.43
Library	355,091.54
Physical Plant	77,547.82
Union Building	1,620.60
Service Departments	53,380.70
TOTAL	$ 1,640,669.49

7. Predicted Enrollment.--Under paragraph 6 appear enrollment figures for the Chicago Colleges of Dentistry, Medicine, and Pharmacy, and the Graduate School from 1935 to the Spring of 1944 inclusive. This table indicates that from 1935 with a total of 1,084 students to 1941, a gradual but somewhat uneven increase occurred to a total of 1,343. This total by colleges in 1941-42 shows an enrollment of 229 students for Dentistry, 617 for Medicine, and 224 for Pharmacy. The College of Medicine is the largest medical school in the country. During the war years, to the present time, a slight increase has occurred in the enrollment of the Colleges of Dentistry and Medicine to the totals of 236 and 681 respectively, representing the maximum possible enrollment in each college. At present these two colleges have Army and Navy training programs which largely sustain their enrollment. The College of Pharmacy on the other hand has experienced a sharply falling enrollment from 1941 to date because it does not

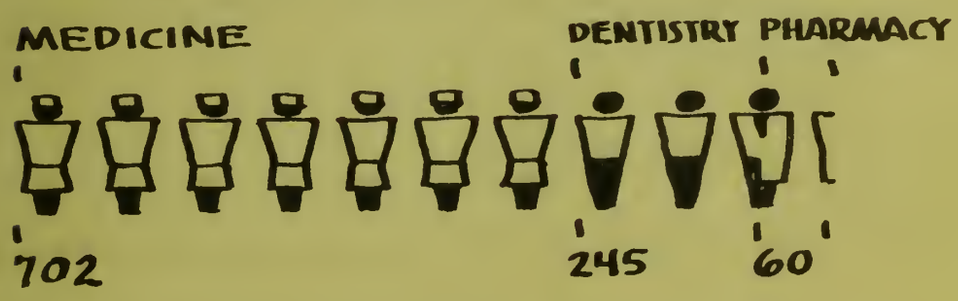
STUDENT ENROLLMENT

INCLUDING GRADUATE STUDENTS

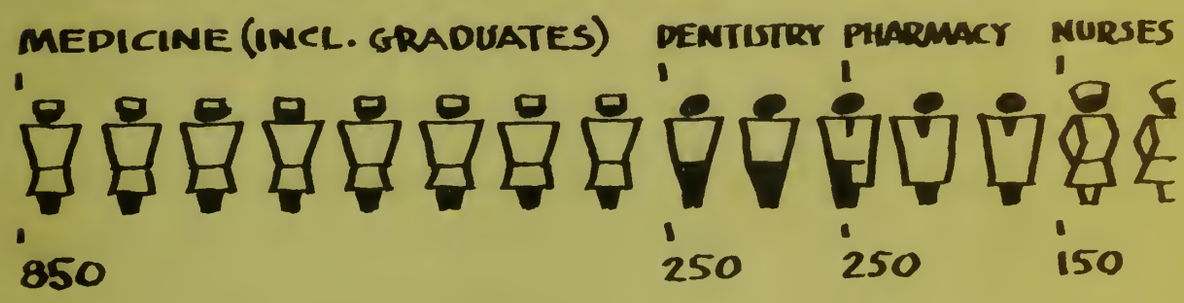
BEFORE THE WAR 1226



DURING THE WAR 1007



ESTIMATED POST WAR 1500



CONCLUSION IF OTHER FACILITIES ARE MADE ADEQUATE THERE IS NO IMMEDIATE NEED FOR ADDITIONAL CLASSROOM AND LABORATORY FACILITIES

have Army and Navy training programs. The drop has been from a total of 304 in 1941 to 54 in the Spring of 1944. Enrollment in the Graduate School has also dropped sharply from the maximum of 235 in 1939 to 39 at present. The total enrollment for the Chicago Colleges in the Spring of 1944 is 1,007. Even with these reductions, the College of Medicine remains the largest medical school in the country.

The predicted enrollment after the war for the College of Medicine is 650; Dentistry, 250; Pharmacy, 250, Nurses, 150; and graduate and post-graduate, 200; giving a total of 1,500, if not restricted to 1200 as at present.

The enrollment in the undergraduate programs in the College of Medicine, Dentistry, and Pharmacy is limited by the teaching capacity of the laboratories and the figures cited represent the maximum load. It will be possible to increase the graduate teaching program above the predicted enrollment as the demand requires. The figure of 1,500 given is a predicted normal enrollment in 1950.

8. New Floor Area Needed.—No request is being made for additional floor area to carry the laboratory and classroom teaching load except in relation to the Library-Museum-Auditorium project which is discussed in detail in Section B of Part III. The greatest expansion in floor area is required in the Research and Educational Hospital Additions project. This project is designed to increase the hospital bed services and outpatient service in certain areas which are now inadequately served to meet minimum standards for clinical instruction in the fields of Internal Medicine, Surgery, Obstetrics and Gynecology, and Pediatrics. This does not involve new programs; it is simply a project which will bring the University's General Hospital up to minimum standards for medical education in the clinical fields. The Library-Museum-Auditorium project is designed to meet the expanding needs of the Quine Library which has already outgrown its present capacity and to develop a correlated program of Visual Education.

9. Costs Per Square Foot of Floor Area.--The projects proposed include additions to the General Hospital, Atmospheric Research Equipment, a Library-Museum, a Power Plant and Land Acquisition.

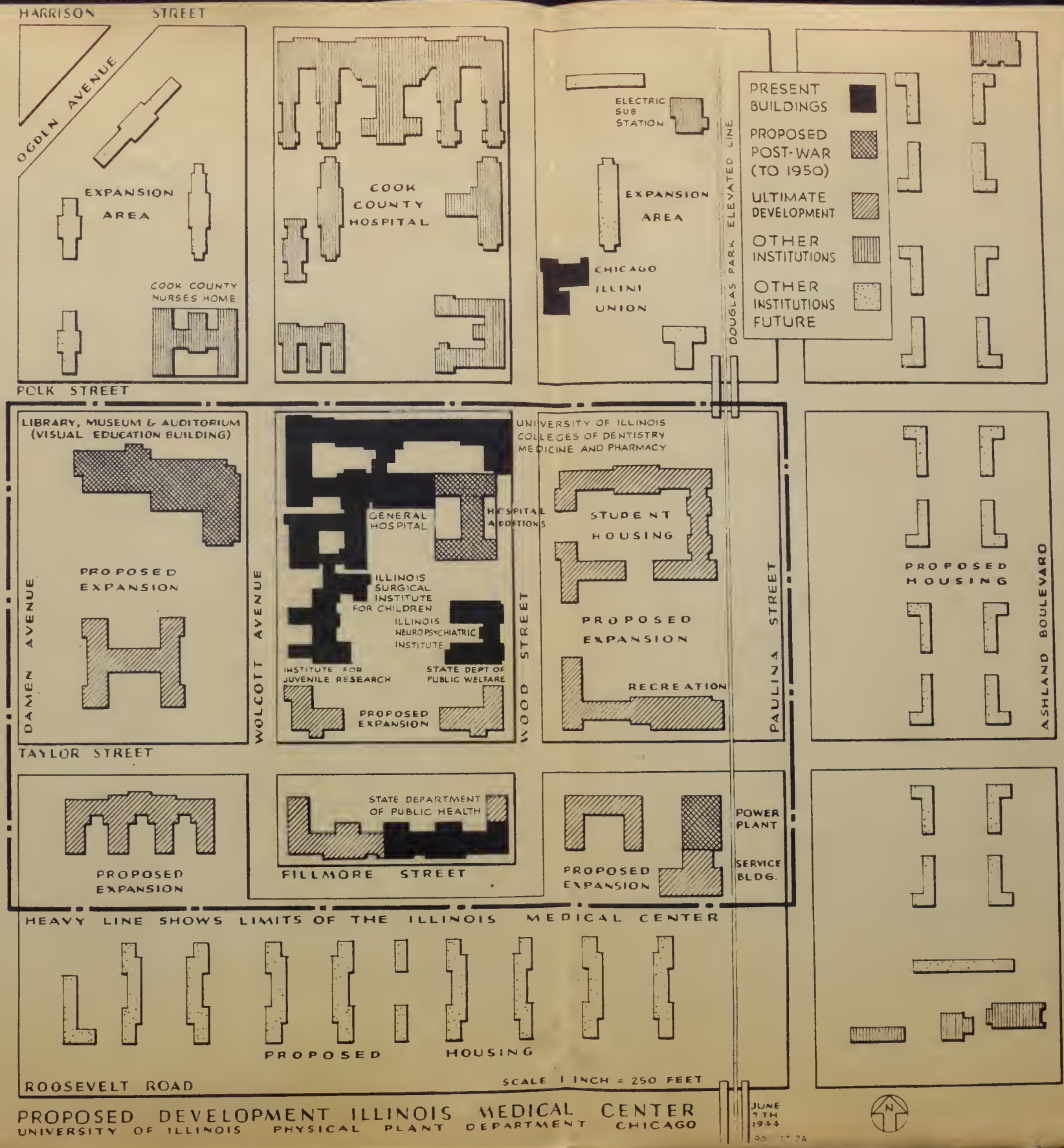
These projects do not fall into sufficiently uniform classification to permit the use of a general cost unit. Basis of the cost estimate in each case has been described in detail under Part III, Section B.

10. Total Floor Area and Cost of New Buildings and Additions.--The order of priority for the projects proposed and the anticipated time schedule for their construction is shown on the following table.

CONSTRUCTION SCHEDULE

Project	Floor Area sq.ft.	1945-1947	1947-1949	1949-1951	Total
Additions to the General Hospital	316,000	$2,000,000	$1,773,000	$ ----	$3,773,000
Atmospheric Research	----	250,000	----	----	250,000
Land Acquisition	----	140,600	250,000	----	390,600
Power Plant and Utilities	35,000	2,101,400	----	----	2,101,400
Visual Education Building	100,000	----	800,000	300,000	1,100,000
TOTALS	451,000	$4,492,000	$2,823,000	$ 300,000	$7,615,000

The construction schedule shows the total amounts which will be needed in the three biennia following the war. In order to carry out the schedule shown, it will be necessary to proceed with architectural and engineering drawings and specifications in the near future. Specific relations of each project to the whole program are described in detail under the several projects listed



PROPOSED DEVELOPMENT ILLINOIS MEDICAL CENTER
UNIVERSITY OF ILLINOIS PHYSICAL PLANT DEPARTMENT CHICAGO

JUNE 7TH 1944

in Part III, Section B. It is important to note that the program should be considered as a whole rather than as made up of several independent projects.

11. Remodeling and Modernization.— No separate project for remodeling and modernization has been included on the list.

During the last 20 years there has been continued depreciation of the Chicago buildings as well as the usual obsolescence. When the University assumed operation of the General Hospital, it was determined that extensive replacement of mechanical services would be necessary to permit future operation of the building. Provision for a portion of this has been made in Project 1, Additions to the General Hospital.

12. Utilities and Distribution Systems.— The present power plant, built in 1925 and extended in 1937 and 1941, provides steam for the present academic building and for the Research and Educational Hospitals. It is obvious that increase in size of the buildings in the Illinois Medical Center will at some point require an increase in power plant facilities.

Consideration has been given to the possibility of improving and expanding the present power plant. The size and condition of this plant are such that additions and improvements would be difficult to make without loss of efficiency in layout and operation. Its location relative to the future development of the Illinois Medical Center also discourages development of the present building.

Calculations show that the proposed hospital additions can be carried with the present plant provided new auxilary services are installed. If any other building project is undertaken, a new power plant will be needed.

The anticipated increase of load on the power plant is indicated by the list of proposed and existing buildings on the following page.

The increase of cubical contents will result in raising the demand for electricity by 250% and for steam by 170%.

PROPOSED AND EXISTING BUILDINGS
ILLINOIS MEDICAL CENTER

Proposed Post-War Buildings	Cubical Contents cubic ft.	Gross Floor Area square ft.
University of Illinois Buildings		
Additions to General Hospital	3,800,000	316,000
Visual Education Building	2,140,000	150,000
Student Residence Halls, 1st Unit	1,500,000	125,000
Sub-total	7,440,000	591,000
Buildings of others		
Illinois Eye & Ear Infirmary	1,800,000	150,000
Acute mental hospital	5,375,000	435,000
Sub-total	7,175,000	585,000
Sub-total Post War	14,615,000*	1,176,000
Add Existing Buildings to be Served by Future Power Plant		
Chicago Illini Union	521,000	44,600
Department of Public Health.	580,000	53,000
Sub-total.	1,101,000	97,600
Buildings on Present Plant		
DNP Building.	5,391,000	398,000
General Hospital & Dining Room	2,491,000	207,000
Illinois Surgical Institute	748,000	53,300
Nurses Home	215,000	25,900
Illinois Neuropsychiatric Institute.	1,512,000	127,000
Institute for Juvenile Research.	448,000	36,700
Sub-total.	10,805,000	847,900
Sub-total Existing	11,906,000	945,500
TOTAL: POST-WAR & EXISTING	26,521,000*	2,121,500

* Does not include proposed power plant.

The new power plant is intended to house the steam generating unit, and the proposed new distribution systems will provide space for piping needed at once, as well as in the future. The plant will be designed to take care of existing buildings, post-war buildings and the buildings planned for the ultimate development of the Illinois Medical Center. Estimated cost of the entire project is $1,860,000.

13. Campus Improvements.--Improvements of the present campus and development of new land being acquired call for landscaping work, construction of sidewalks and curbs and installation of general lighting.

Projects 1, 3, and 4 will include landscaping the grounds immediately surrounding the buildings but no project has been included to extend the campus development of sidewalks, drives and landscaping into those areas where building projects are not immediately contemplated.

14. Land Acquisition.--Land to be acquired falls into three general categories; first, land which is needed to carry out the building program proposed for the immediate post-war period; second, land to be acquired to permit completion of the total building expansion program; and third, land in the marginal districts to the east and south, the improvement of which will greatly affect the University's holdings but on which it is not expected to construct institutional buildings.

The item of $750,000 included in this report is for land in the first and second categories. Maps following page 144 indicate the extent of land owned at present and proposed for acquisition under these three categories.

Because of the time required to assemble large parcels of land needed for institutional buildings in sections where the present ownership is divided among a great many different individuals, it is important to begin land acquisition at least 5 years ahead of the date on which building construction is to start. It is also desirable to purchase land through direct negotiations with the present owners, reserving for exceptional cases the application of eminent domain. Whether the procedure is through direct purchase or condemnation, the avoidance of excessive costs or lengthy litigation may require several years.

The extension of University land acquisition into the marginal area referred to becomes necessary to protect the University's large investment now existing and being proposed within the core area designated the Illinois Medical Center. It is proposed that vacant land and depreciated properties be acquired in the marginal area to prevent their development by other agencies and that they be held by the University until development of the Medical Center District, as a whole, and land assembly in particular have reached the point where other agencies are ready to build approved housing. It is certain that the improvement of the Illinois Medical Center will result in increased values in the marginal area and that the University by thus controlling the land most desirable for development, will protect itself against projects in the marginal area which might not be favorable to the proposed campus development. By the same token, the University will be able to trade or sell such properties when the time for development arrives. In this way the University will not only advance its own interests but also take a leading part in improving a major section of the Medical Center District.

PART III

THE CHICAGO CAMPUS

SECTION B

PROPOSED PROJECTS

[illegible]

[illegible]

[illegible]

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PART B. PROPOSED PROJECTS

The projects proposed for construction on the Chicago campus are summarized in the following table:

SUMMARY OF "PREFERRED" PROJECTS

Project	Estimated Cost				
	Building	Land	Equipment	Plans & Spec.*	Total
General Hospital Addition	$3,205,000	$ 20,000	$ 373,000	$ 175,000	$3,773,000
Atmospheric Research			245,000	5,000	250,000
Land Acquisition . .		380,600		10,000	390,600
Power Plant and Utilities	717,800	241,400	1,042,200	100,000	2,101,400
Visual Education Building	842,000	108,000	95,000	55,000	1,100,000
TOTALS . . .	$4,764,800	$750,000	$1,755,200	$ 345,000	$7,615,000

* Allowances are for all architectural and engineering services, including supervision.

A Project Prospectus for each project given in this summary has been filed with the Post-War Planning Commission. These prospectuses give the basic information in each project. More detailed information is given in the pages which follow.

CONSTRUCTION SCHEDULE

The proposed Construction Schedule for the projects on the Chicago Campus is given on page 140.

SUMMARY OF DESIRABLE PROJECTS
for the
CHICAGO CAMPUS

Prospectuses for these projects not submitted to the Post-War Planning Commission. Descriptions are included in "Inventory" but are not in this Report.

Proj. No.	Name of Project	Estimated Cost* Building	Arch.& Eng.	Total
151	Arboretum.....	$ 47,000	$ 3,000	$ 50,000
152	Nurses Home.....	1,175,000	75,000	1,250,000
153	Residence Halls.....	1,410,000	90,000	1,500,000
154	Laundry and Service Building.....	305,000	20,000	325,000
155	Auditorium.....	611,000	39,000	650,000
156	Women's Hospital.....	940,000	60,000	1,000,000
157	Isolation Hospital.....	940,000	60,000	1,000,000
158	Gymnasium.....	940,000	60,000	1,000,000
	Totals.....	$6,368,000	$ 407,000	$ 6,775,000

* Cost of land not included.

Name of Project: ADDITIONS TO GENERAL HOSPITAL

a. Cost: Buildings $3,380,000; Equipment $373,000; Land $20,000; and Total $3,773,000.

b. Basic reason for need: Inadequate provision of teaching beds and obsolescence of present building. **Project adds 300 beds.**

c. Location: On the present campus, west side of Wood Street, south of the Dental, Medical and Pharmacy Building and north of the Illinois Neuro-psychiatric Institute.

d. Use: General Hospital used for clinical teaching and research.

e. Description of project: Kind - The addition of a major building to the present General Hospital and the complete modernization of the present hospital building. Construction - Reinforced concrete frame. Brick exterior. Sanitary finishes in interior.

f. Justification: The justification for the hospital additions rests chiefly upon the fact that present clinical teaching facilities are inadequate for the large student body which the University now has in the College of Medicine. Statistical justification of this conclusion appears herein.

Certain features of student enrollment do have a bearing on the need for hospital additions. At the present time the Colleges of Medicine and Dentistry have a capacity enrollment and would therefore be unable to accommodate an increased student body after the war. The College of Pharmacy now has approximately one-third the students it can accommodate and will, therefore, be capable of absorbing the remaining two-thirds after the war.

Since the College of Medicine is already the largest in the United States, it is our judgment that no great increase in student enrollment should be anticipated or provided for by the University of Illinois, at least until adequate clinical hospital teaching facilities have been provided for the present teaching requirements.

There will be an increase in the total enrollment on the Chicago campus due to the inauguration of a program in nursing education, programs in certain sub-professional technological fields, and an increase in the enrollment in graduate and postgraduate courses. However, the proposed building program is not justified on the basis of enrollments. The hospital additions are proposed primarily to improve the general services of Medicine, Surgery, Obstetrics and Gynecology, and Pediatrics. It is recognized that the integrated teaching program should be strong in these four basic departments. The present assigment of hospital beds leaves a relative deficiency for these general services and gives a disproportionate allotment to certain specialties. Correcting this discrepancy will give a curriculum more nearly in balance and strengthen the basic integrated teaching facilities.

The present General Hospital, built in 1923 with six stories and basement, has a gross floor area of 191,000 square feet and a net useable floor area of 160,900 square feet. The building is reinforced concrete frame, fireproof construction. In the twenty years of its life it has experienced the maximum of depreciation as well as functional obsolescence. The program contemplates modernization of the greater portion of the present space as well as the addition of new space. Special emphasis should be placed on the depreciation of the mechanical services. The condition of the piping and electrical wiring is such that practical replacement of piping, conduit, duct work, valves, pumps, fans, cut-out boxes, and all such related items will be necessary to permit the present building to continue as a functioning hospital and to bring its services up to date. Such a program of modernization is essential even without the addition of new space.

The present hospital provides 240 hospital beds. This, when added to the beds available in other University-controlled hospitals and institutes, gives

a total of 567 hospital beds, or 1.6, for each third-and-fourth-year medical student. This figure is below the average of 2.0 for the lowest ten medical schools listed in the American Medical Association report titled "Medical Education in the United States, 1934-1939". When added to the 3.9 beds per student available to the University for teaching in the affiliated hospitals, Cook County and Presbyterian, this figure gives a total of 5.5 which is still below the average of all schools covered in this report. The average of the ten highest schools listed in the report was 10.3. This proposal increases the University's ratio to 6.3.

The shortage of clinical teaching facilities is in a measure a reflection of the general conditions in this area. The total of hospital beds available in the several general public hospitals under Cook County administration is 3,400. New York City with a population approximately twice that of Cook County has a total of 11,000 public hospital beds. By comparison, Cook County should have 5,500 such beds instead of the 3,400 existing.

From these statistics it can be seen that the clinical teaching facilities at the present time are well below standard.

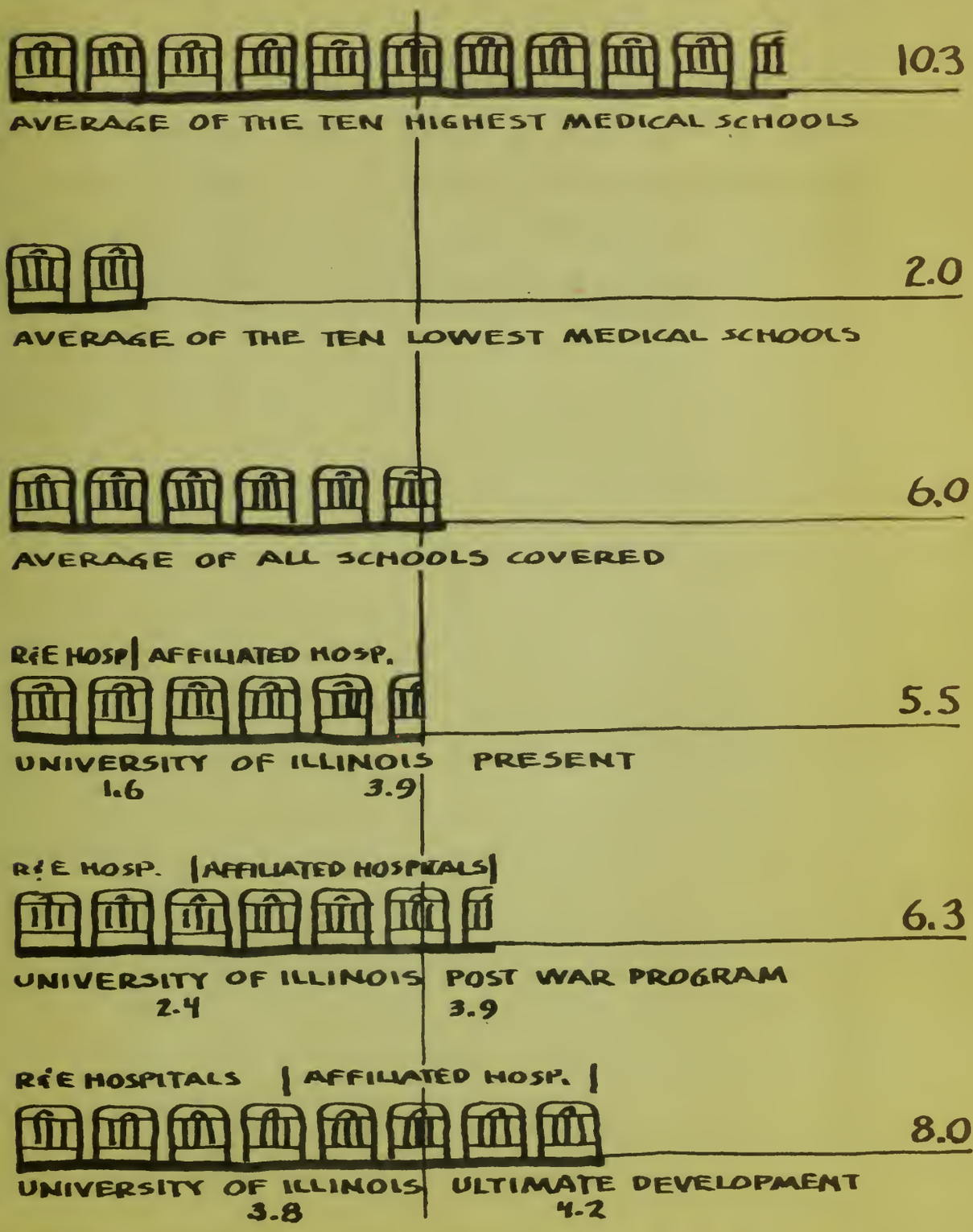
g. Relation to other projects: The project is independent of other projects listed in the sense that it does not depend upon those projects for its execution. It has an indirect relation to the Visual Education building in that the clinical teaching to be carried on in the proposed additions will avail itself of the advanced technics of visual education which are expected to be developed. It also relates to the power plant in that the completion of the proposed hospital addition will tax the present power generating facilities to their limit and will require installation of new controls and auxiliary services. It has no direct relation to the land acquisition program since it will be built on land already owned.

h. Priority: Preferred.

AVAILABLE TEACHING BEDS

FOR EACH THIRD & FOURTH YEAR MEDICAL STUDENT

THE EXTENT OF CLINICAL TEACHING IS DETERMINED BY THE NUMBER OF AVAILABLE TEACHING BEDS



CONCLUSION – BOTH MODERNIZING AND ADDING TO THE GENERAL HOSPITAL ARE PROJECTS URGENTLY NEEDED

i. Biennium: See "Construction Schedule", Part III, Section A, paragraph 10.

j. Operating Budget: The estimated increase in operating costs totals $684,000 per year. This is based on an additional 80,000 patient visits in the out-patient department at 75 cents per visit and an additional 250 patients cared for in the hospital at a cost of $4.12 per patient per day, and an estimated $249,000 for building maintenance and operation.

Name of Project: ATMOSPHERIC RESEARCH

a. Cost: Equipment $250,000; Total $250,000.

b. Basic Reason for Need: Expansion of the present program of research in environmental medicine including special research related to aviation problems.

c. Location: Included in the ground floor of the proposed additions to the General Hospital.

d. Use: Research Laboratory.

e. Description of Project: Kind - New construction. Construction - Reinforced concrete frame.

f. Justification: The present program of Atmospheric Environmental Research has demonstrated the opportunities which exist for research in this field. The present program is only a beginning.

The research experiments are now housed in a section of the General Hospital, occupying approximately 4,500 square feet. A portion of this space has been equipped with equipment for special atmospheric control needed for the research. An attempt to develop further research projects within the present hospital building would result in a conflict between the research and hospital functions. It has also been necessary to encroach upon the mechanical service space of the hospital to provide equipment required by the experiment. Further

expansion of the mechanical units would also be difficult. Space limitations make imperative plans for housing Atmospheric Environmental Research in a separate space.

It is anticipated that the development of air transportation in the post-war period will call for continued Atmospheric Environmental Research of the type already undertaken and extension of the program to other related fields. The overall University program of teaching and research phases of aviation medicine and related subjects is being conducted on the Chicago Campus. This work will, however, be closely correlated with the other experimental aviation programs to be carried out in Urbana. Some of the work being done in Chicago will involve engineering research as well as medical research, on which correlation of the work will be essential.

It is proposed that special research projects be housed in a separate space as closely connected to the General Hospital as may be possible. Special provision is to be made for control of temperature, pressure, air movement, humidity, air cleanliness, and probably other factors which will appear as the research progresses. Provision for special space for Atmospheric Environmental Research will free the section of the hospital now devoted to that project. The plans for the hospital additions presume that this space will be available for hospital use.

The proposed plan locates Atmospheric Environmental Research so that expansion which may become necessary in the future will be possible. It is estimated that the proposed accommodations will serve the probable requirements for a period of thirty years.

g. Relation to other projects: The Atmospheric Research project as proposed covers equipment only and its completion at the figure quoted is contingent upon space being available in the additions to the General Hospital. Such space has been planned for and will be available if the additions are built. If project is to be done without building the additions to the General Hospital, the estimated project cost will be $500,000.

h. Priority: Preferred

i. Biennium: See "Construction Schedule" Part III, Section A, paragraph 10.

j. Operating Budget: The estimated increase in the annual operating budget totals $103,000 made up of an estimated $57,000 increase in research costs and $46,000 for building operation maintenance.

Name of Project: LAND ACQUISITION

a. Cost: Land $380,600; Total $380,600.

b. Basic Reason for Need: To provide sites for proposed new buildings

c. Location: Within the area bounded by Polk Street, Ashland Avenue, Roosevelt Road and Damen Avenue.

d. Use: Building sites.

e. Description of Project: Kind - Land acquisition. Construction - None.

f. Justification: Under Part III, Section A, Item 14, (page 15), the need for land acquisition is fully covered. It should be emphasized that the program must be initiated well in advance of the building program in order to succeed.

g. Relation to other Projects: Land Acquisition is independent of the other projects and should be started at once since several of the other projects will depend on land acquisition for their ability to be started.

h. Priority: Preferred.

i. Biennium: See "Construction Schedule" Part III, Section A, paragraph 10.

j. Operating Budget: A minimum budget will be required for demolition of existing buildings and to maintain the properties in satisfactory condition pending completion of the building program. The amount required will fluctuate considerably depending upon the extent of demolition and condition of buildings to be wrecked.

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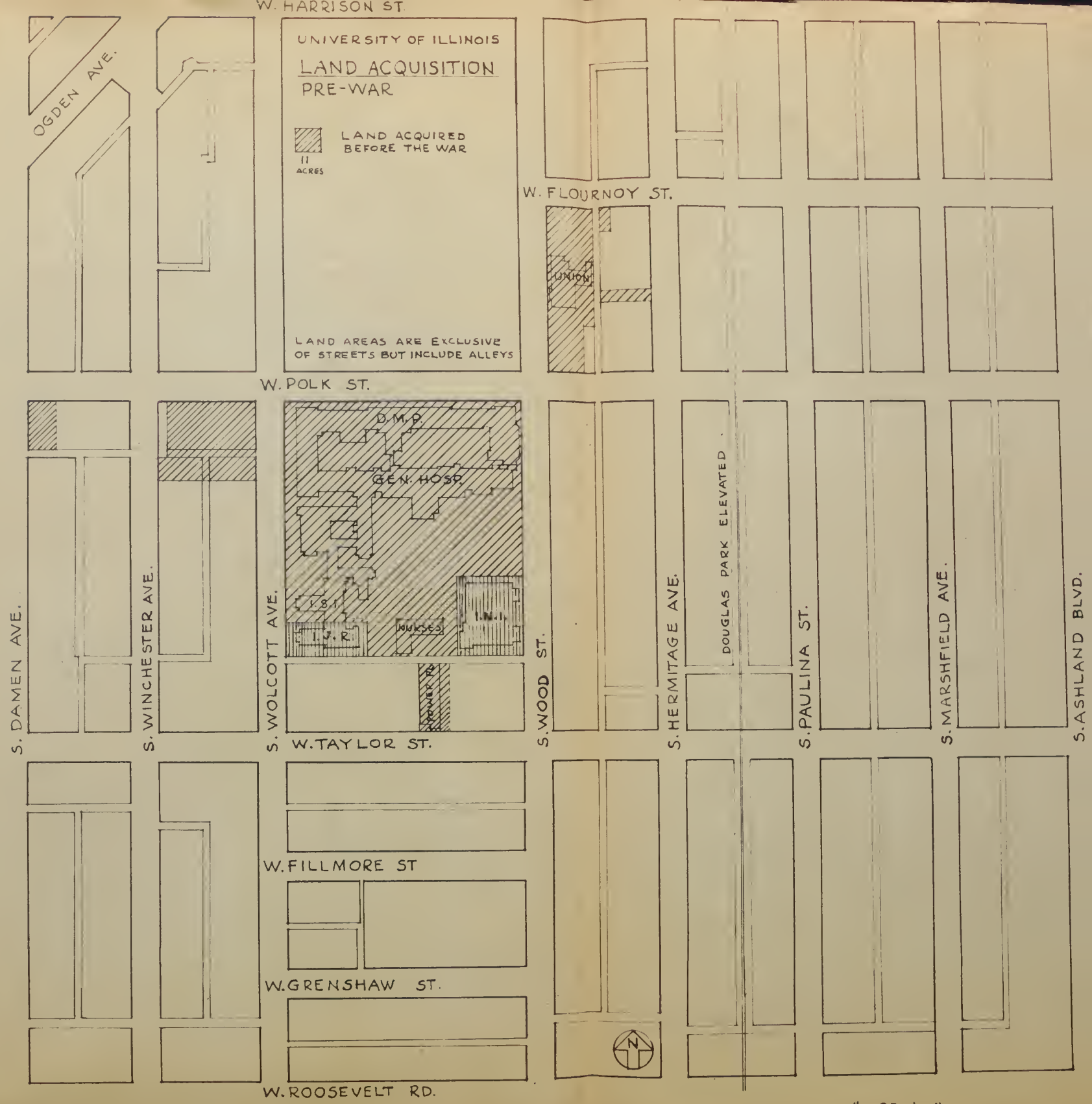
S. DAMEN AVE.

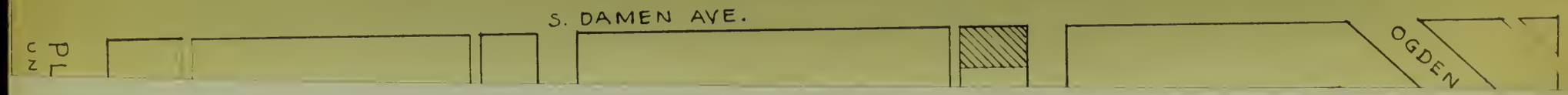


PLAT OF ILLINOIS MEDICAL CENTER

UNIVERSITY OF ILLINOIS PHYSICAL PLANT DEPARTMENT - CHICAGO.

1" = 250'-0"

6-6-44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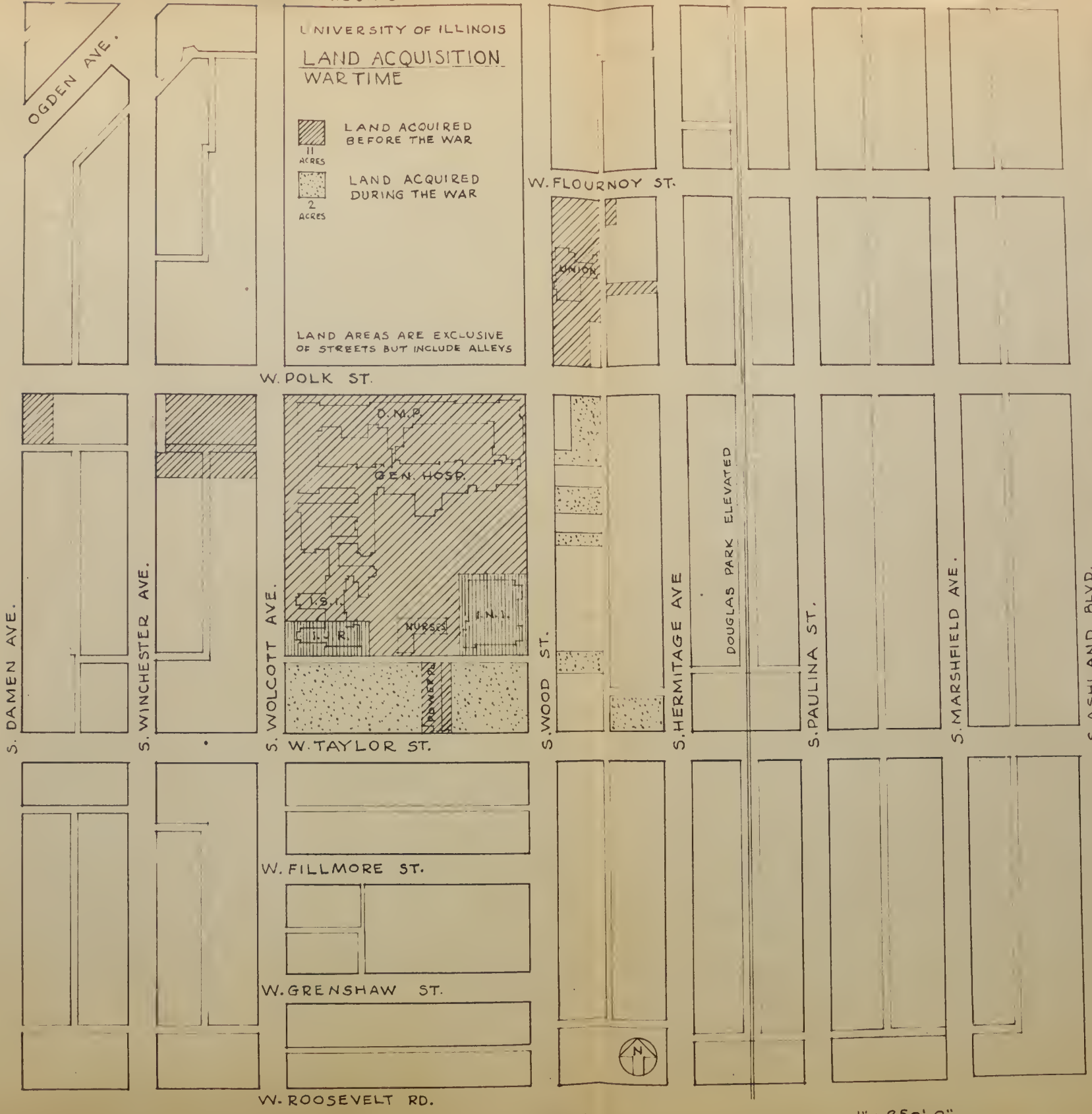

PLAT OF ILLINOIS MEDICAL CENTER

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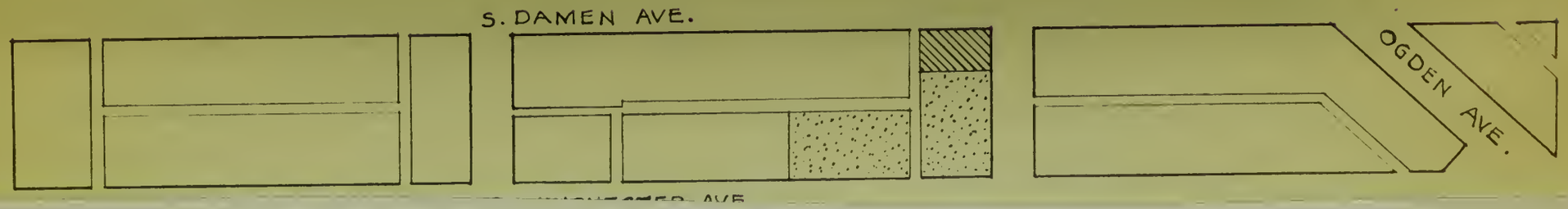

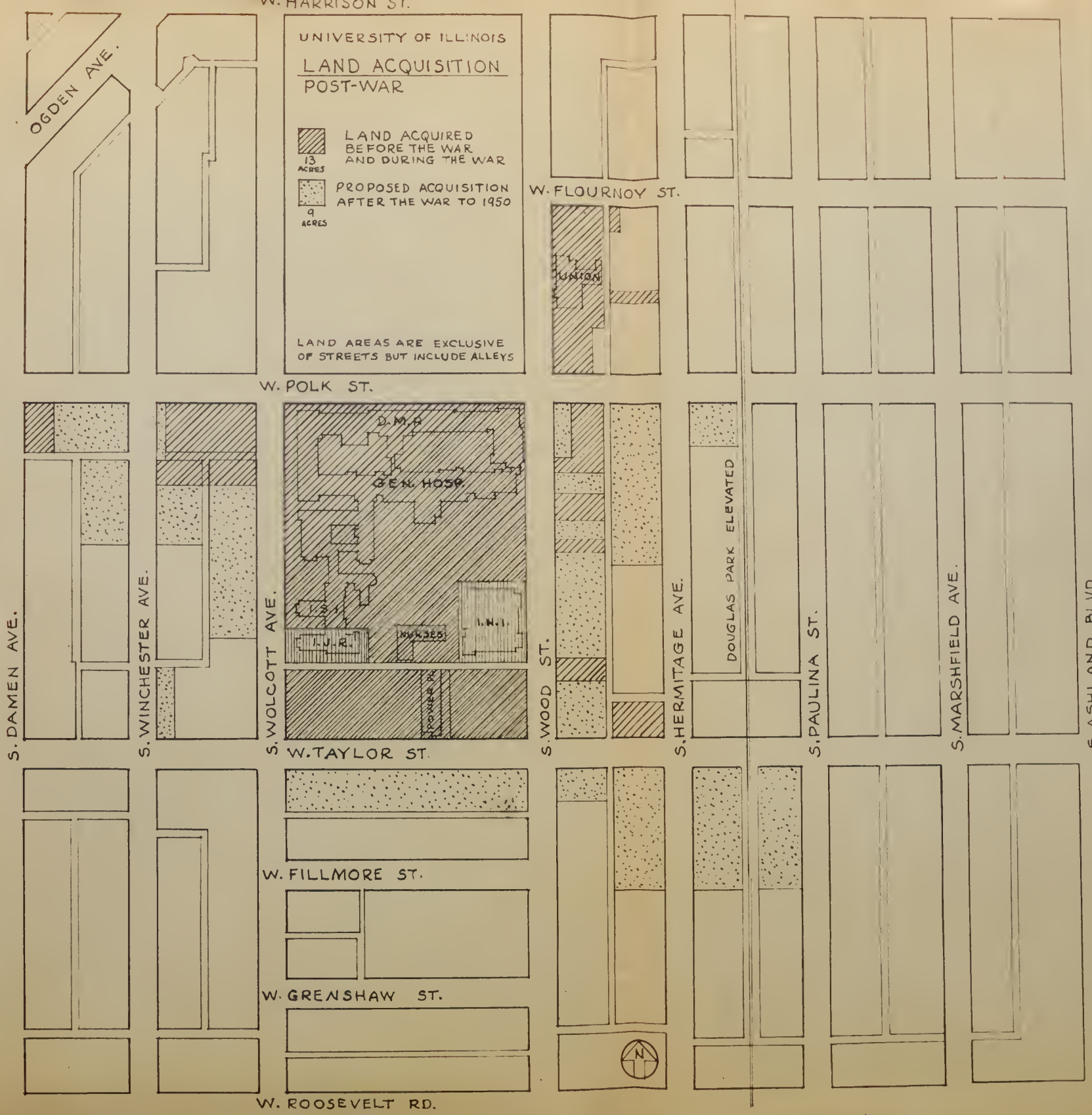

PLAT OF ILLINOIS MEDICAL CENTER

UNIVERSITY OF ILLINOIS PHYSICAL PLANT DEPARTMENT – CHICAGO.

1" = 250'-0"
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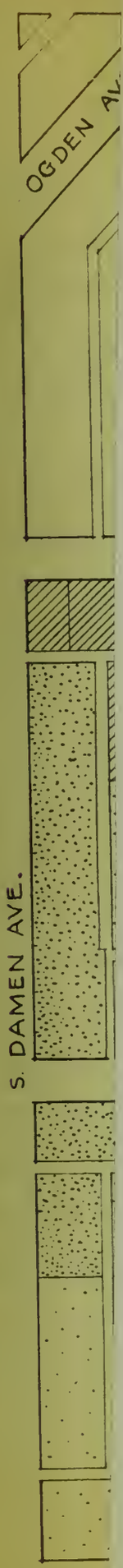

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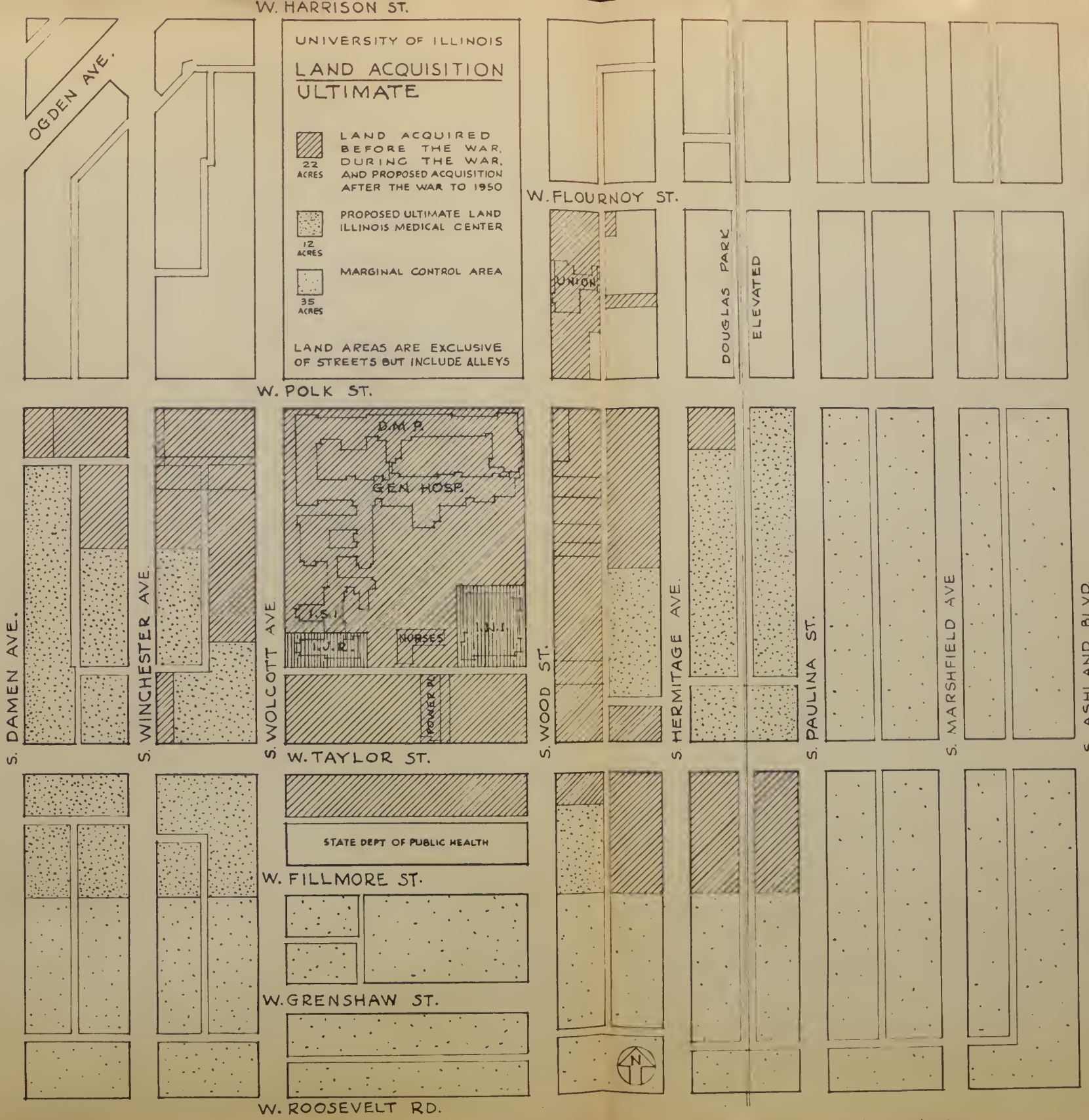

PLAT OF ILLINOIS MEDICAL CENTER

UNIVERSITY OF ILLINOIS PHYSICAL PLANT DEPARTMENT - CHICAGO.

1" = 250'-0"
6-6-44

Name of Project: POWER PLANT AND UTILITIES

a. Cost: Buildings $817,800; Equipment $1,041,200; Land $241,400; Total $2,101,400.

b. Basic Reason for Need: Supply steam, electricity, gas, water, and air for proposed new buildings, and existing buildings. See Schedule on page 142.

c. Location: Southeast corner of Taylor and Hermitage Streets on land to be acquired.

d. Use: Power generation and distribution.

e. Description of Project: Kind - New construction. Construction - Reinforced concrete frame, steel frame, brick exterior.

f. Justification: The present plant is approximately 20 years old with the exception of the addition of two boilers, one installed in 1937, the second in 1941. No changes have been made or additions for feed water treatment or the handling of ashes and fly-ash and the coal bunker is of insufficient capacity for adequate supply of coal. The feed water pumps were designed to take care of the two original chain link stokers. The power plant is located in the approximate center of the area and any coal storage on the ground will add to the cost of keeping the buildings clean. The problem of dirt in the buildings from the power plant will always exist if it remains in the present location. The proposed location is at the southeast corner of the area taking advantage of the prevailing southwest winds. In the new plant all modern means of dirt abatement will be incorporated. The present plant with the limiting factor of the auxiliary equipment is near capacity. This plant at present is serving approximately eleven million cubic feet of building. It is contemplated adding approximately 1,100,000 cubic feet of existing building and the proposed post-war building program contemplates the addition of another

14,615,000 cubic feet. This means a proposed increase during the post-war building period of approximately 130 per cent. This increase of 130 per cent is divided approximately 65 per cent for University of Illinois post-war buildings and 65 per cent for the Department of Public Welfare buildings. The services of the old plant are divided between the two, approximately 20 per cent Department of Public Welfare and 80 per cent University of Illinois. The services of the new plant will be divided approximately 35 per cent Department of Public Welfare and 65 per cent University of Illinois.

In order to take care of the anticipated 130 per cent increase in load and to generate a portion of our electricity, it is quite evident that a new power plant will be required before the building program has been completed. In this program is contemplated the replacement of the present steam distribution system and complete relocation of the primary electrical load centers and replacement of electrical distribution system to the secondary load centers in the buildings.

The present steam distribution system might be likened to a tree. The trunk of the tree, or the main steam supply running through a pedestrian tunnel, branching off to the various buildings. It is evident that mechanical failure in the main steam line would result in closing the buildings. In a school building or office building, the people can leave. However, in a hospital the patients cannot be readily moved and this would be a major catastrophy during cold weather.

In the new distribution system it is intended to place a loop around the present hospital area. That would be from Taylor Street north on Wood Street to Polk Street, west to Wolcott, south on Wolcott to Taylor, and Taylor back to Wood Street completing the loop. This loop would be so valved that in case of failure in any section, that section could be valved off and the buildings fed from the other direction of the loop.

This same condition is more or less true in our present electrical distribution. This will be corrected in the contemplated new electrical distribution, all of which will be controlled from the power plant.

In conclusion, the present plant is outmoded and requires complete rehabilitation. A load increase of approximately 130% is contemplated during the post-war period. With this increased load it is feasible to generate electricity resulting in a reduction of steam and electrical costs. The present steam distribution system does not provide sufficient flexibility to allow for safe operation of the hospitals. The electrical distribution, likewise, is to be designed to give additional safety in the hospital. The University has employed Sargent & Lundy, a firm of mechanical engineers, who will furnish detailed justification with supporting data.

g. Relation to Other Projects: Power Plant and Utilities becomes necessary as soon as buildings other than the additions to the General Hospital are contemplated. This project is designed to service buildings of the State Department of Public Welfare, the State Department of Public Health and the Presbyterian Hospital in addition to the buildings of the University of Illinois. The probability that some or all of the buildings contemplated by these other agencies will be built by 1950 is great enough to justify giving the power plant priority position number 4.

h. Priority: Preferred.

i. Biennium: See "Construction Schedule" Part III, Section A, page 12.

j. Operating Budget: The power plant will be established on a revolving account so that all operating costs will be charged to various buildings on a prorate basis. These costs have been included in the estimated increased in operating budgets for the projects listed and are not, therefore, repeated under this project.

Name of Project: VISUAL EDUCATION BUILDING

a. Cost: Buildings $897,000; Equipment $95,000; Land $108,000; and Total $1,100,000.

b. Basic Reason for Need: Expansion of present program and new program.

c. Location: Southwest corner Polk and Wolcott Streets.

d. Use: Library-Museum-Auditorium to be built later.

e. Description of Project: Kind - New Construction. Construction - Reinforced concrete frame, brick exterior.

f. Justification: The present library contains 80,000 volumes and occupies 17,500 square feet of floor area. This area is located at one point on the basement and first floors of the Dental, Medical, and Pharmacy Building. It serves a total reading group of approximately 2,000, including 1,200 students and 800 staff members.

The central location of the library represents a real advantage. Limitations of construction and function prevent adequate expansion of the library service within the present building. The expansion which has been witnessed through the past ten years has already resulted in a spreading of the library service which not only causes inefficient library operation but represents an encroachment upon the space designed for other use. An actual physical limitation was reached in 1940 beyond which expansion in the present space is impossible.

The University possesses a considerable volume of display material which cannot well be combined with the library material. This is in the form of drawings, models, wet sections, microscopic sections, photographs and microfilms. At the present time, it is displayed at two rooms in the D.M.P. Building

and installed in a few corridor display cases. Material is also being used in certain hospital units including obstetrics in which the cabinet displays are simply placed in the hospital corridors. This gives the desired closeness to the clinical teaching material but produces an undesirable physical condition since the corridors were not designed for this use. A liberal estimate of the present floor space devoted to museum use is 4,300 square feet.

It is proposed that the museums now existing be continued at least until it has been demonstrated that they no longer serve a useful purpose and that the new Visual Education Building be designed to take care of a very much greater number of exhibits which the University possesses or which are available to the University but for which no display space now exists. Housing the exhibits in the Visual Education Building will free a certain amount of storage space in the present buildings and it may eventually release some of the present museum space.

The University now possesses six lecture rooms with a total floor area of 10,200 square feet and a total number of 957 seats. Available in the Illinois Neuropsychiatric Institute and in the Institute for Juvenile Research are two additional lecture rooms with a total floor area of 2,400 square feet and a total number of 175 seats. This gives a grand total for the Illinois Medical Center of 8 lecture rooms with a floor area of 12,600 square feet and 1,132 seats. The largest of the lecture rooms is located in the D.M.P. Building and contains 390 seats. There is thus available no auditorium for such function as Commencements and larger public meetings. The location of the lecture rooms within the school building makes them difficult of access for the public, especially at night. For that reason, the proposed building includes an auditorium seating 1,500 which will be so located that public use, as well as

University use, will be possible. It is probable that a lecture room seating 250 people will be specially equipped for the use of visual materials. These provisions will not replace any of the existing lecture rooms, but will permit, in the one case, the housing of large assemblies at the University instead of in Public Halls remote from the University lecture rooms.

At no point in the Medical Center District is there an auditorium satisfactory for public meetings and for meetings of scientific and professional associations. Such an auditorium might well serve as a community assembly center for the entire Medical Center District as well as for the smaller group known as the Illinois Medical Center. Such service would be in addition to the service it would render the University of Illinois teaching program which in itself is felt to justify the building.

g. Relation to other Projects: The Visual Education Building project is contingent upon erection of the power plant and procurement of a small amount of additional land. It is otherwise independent of other projects. The proposal for the post-war program includes only the library-museum portions of the Visual Education Building and is designed to permit erection of the aiditorium portion at a later date.

h. Priority: Preferred.

i. Biennium: See "Construction Schedule" Part III, Section A, page 12.

j. Operating Budget: The estimated increase in operating budget to provide for the enlarged program and new services totals $143,000. This is made up of an increase of $18,000 in the library administration budget, $15,000 in the budget of illustration studios, $20,000 for new services not now rendered and $90,000 for building operation and maintenance.